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An Address
ON THE
CONTROL OF SCARLET FEVER.

Delivered before the Epidemiological Section of the Royal Society of Medicine on Jan. 28th, 1910.

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MR. PRESIDENT AND GENTLEMEN,—Occurrences, such as are within the experience of most of us, have led to the recognition of definite drawbacks to the attempted control of scarlet fever by removal to isolation hospitals. Statistical inquiries have led some to question altogether the usefulness of such removal, and quite recently we have in this place listened to a paper in which the author sought to establish the *needlessness* of any attempts being made to control the disease by removal. We have also to recognise a more or less coherent mass of lay opinion which is inclined to question the value of isolation hospitals, so far as scarlet fever is concerned, for the somewhat inconsequent reason that such hospitals are rather expensive institutions, and laymen who adopt this attitude are not prone to minimise the force of professional criticism of isolation hospital methods generally, and the hospital method of scarlet fever control in particular. It is necessary therefore that we should clear our minds of that professional cant which is as odious as cant in any other form.

My own opinion is that, even should it be proved that the removal of cases of scarlet fever to isolation hospitals does not generally lessen the incidence of the disease in the district served, yet still the provision of such hospitals, even by the most extravagant of municipalities, is about the cheapest thing in practical insurance offered to the small ratepayer, since for about 5*s*. or 6*s*. a year it insures him against all expense in the event of his household becoming stricken with infectious disease, and safeguards him against business or professional loss. But I do believe that the removal of cases of scarlet fever, if properly carried out, does reduce the incidence of the disease in the community served. I know it *reduces* the case mortality, and I think there is fair evidence that it has modified the type. I am convinced, moreover, that many, if not all, of the accidents or incidents of fever hospital segregation are as absolutely preventable as are the septic catastrophes which do not now occur in general hospitals.

I do not propose to-night to attempt the substantiation of all these beliefs; but am bound, as we all are, to admit that it is our duty, when attempting the control of disease in the interests of the community, to see that we achieve the irreducible minimum of the drawbacks that in all cases attend human endeavour, and in this case fall very hardly on individuals. It is clear enough, too, that if we can at the same time save expenditure we shall gain a more ready ear when we ask for power to administer. The control of scarlet fever in a community, so far as our present knowledge allows us to proceed, means the control of seasonal prevalence, the limitation of occasional outbreaks, and the destruction of endemic or sporadic foci. It involves special procedures: the organisation of a public health department and the particular adjustment of its relations to the practitioner; the establishment of an isolation hospital and the coördination of its administration with that of the public health department; the administration of the isolation hospital, so that complete control is obtained over the diseases admitted thereto.

Epidemiological Considerations.

Before discussing the way in which scarlet fever may be controlled *by* isolation hospitals and *in* isolation hospitals, it is necessary to state some epidemiological considerations. We cannot learn the natural history of scarlet fever in either the hospital or the laboratory. We can in these places learn facts which, set in due relation to others, are of importance. But the bacteriologist, or the hospital superintendent pure and simple, is no greater authority on the natural history of the disease than is a keeper at the Zoo on the habits of the tiger in his jungle. In fact, unless we are prepared to admit that our well-meant efforts are all beside the mark, we must acknowledge that modification of the natural history of disease follows interference by the public health service. Plague and diphtheria, for instance, are two diseases of which the epidemiology has been profoundly modified by human agency, intentionally and unintentionally, within the memory of the present generation. The effects of hospital treatment of scarlet fever as carried out during the last 30 years or so are probably less obvious than would have been the case had domestic isolation not been practised for years previously in some degree, and for the last vivid account of scarlet fever in a natural state in these islands we have to turn to the writings of Graves. Here we learn that in Ireland, in the early part of last century, scarlet fever was observed to occur (1) in epidemics; appearing in the late autumn, and dying away in the next spring, after a course of about seven to eight months; reappearing in successive years with raging intensity, and then perhaps disappearing from a district in epidemic form for years together; and (2) in sporadic cases, often of marked severity. It is worth noting that at this time all grades of severity were noticed, so much so that Graves formulated the axiom that "a constitutional affection, produced by morbid animal or vegetable poisons, may display its evidence by only one or two of the numerous symptoms which usually accompany it." And it is interesting to remember that the cases of this character appear to have been noted chiefly in connexion with the epidemics.

If we now turn to the tables furnished in the last edition of Sir Clifford Allbutt's "System of Medicine," it is seen that the curve of seasonal prevalence of scarlet fever still extends in London, as it did in Ireland a hundred years ago, over a period of seven or eight months. But in Ireland the months of prevalence were usually November or December to May or June. In London the months are June or July to January or February. Almost invariably, in fact, scarlet fever outbreaks of any magnitude (other than those due to milk) run for about eight months from first to last, and the period of greatest activity is always about six weeks. Now the ideas with which, as students, we became imbued were, firstly, that scarlet fever always breeds true; secondly, that a case of scarlet fever of the present day is in direct descent from the first case of scarlet fever that ever existed; thirdly, that outbreaks or epidemics are due to neglect of sanitary precautions; and, fourthly, that epidemics come to an end after undergoing a process known as stamping out. Lately another belief has become current, of which the profession usually seems to endow its holder with extraordinary self-satisfaction; it is that epidemics come to an end from exhaustion of the soil, or, as others say, the number of susceptible persons exposed to infection. Of course much virtue rests in the use of the word "susceptible." Any person exposed to infection at a certain time and not obviously infected may be said to be, or have been at that time, "not susceptible." The "soil" varies in different persons, and in the same persons at different times, no doubt, and "exposure to infection" is by no means a fixed quantity and cannot easily be defined. But does not the infective potency of the virus itself vary; or, what perhaps is not quite the same thing, does not the power of the virus to produce certain "specific" effects vary? The teaching of Pasteur's classical experiments with rabies and chicken cholera is very clear, and, as Professor Ritchie has well put it, in the laboratory an organism obtained from a lesion of malignant type soon loses its virulence or is less virulent than an organism from a less severe case of the same disease. Attenuation results from continuous growth on the same media, but virulence may be increased by passage through a series of bodies or by variation of the nutrient media. Moreover, while the virulence may be increased by such passage, continuous passage may lead to permanent attenuation.

I would ask all those of clinical experience if they have ever known the virus from a typical case of scarlet fever, after passage through two removes, to reproduce in a fourth case the typical symptoms of scarlet fever? With an exception to be presently mentioned, I never have; and I am not sure that, outside the limits of this exception, I have ever seen a *chain* of three typical cases of the disease. The exception is in the case of isolation hospitals. A first return case may apparently give rise to a second return case, and I have known of third, and heard of fourth return cases, making series of four or five cases in all. But these exceptions really do seem to prove the rule, for the isolation hospital experiment is not

a pure one. Assuming that the series of return cases are not capable of other explanation, and that the third or fourth return cases are not delayed secondary ones, there is always the possibility, if not the probability, of a return case being, not a return of the original virus, but of another strain of the same virus, carried by an imperfectly immunised patient. It is true that families in which return cases occur are often families in which there is marked susceptibility to infectious disease, and one cannot refuse to admit that a virus, attenuated to a certain degree, may yet, on certain soils, produce a response otherwise not obtained. The hospital occurrence is, however, in fact directly analogous to the laboratory experiments, in which, when making subcultures, accidental contamination and reinforcement occur. And, until or unless I can hear of an authenticated chain, I am prepared to affirm that the virus derived from a typical, developed case of scarlet fever, after passing through two, or at most three removes in the human body, loses, if not its infective potency, at any rate its power of reproducing typical scarlet fever on normal soil. The virus, in fact, becomes attenuated, or recessive.

There is another clinical observation which many family practitioners will confirm. It is that a process of intensification often occurs. This Graves clearly saw without understanding. One child in a family has a sore-throat; there is no rash, no peeling, little fever. Another child, a week or two later, has a sore-throat, greater fever, and a peeling tongue. A third child develops scarlet fever, as we know and describe it. Surely this sequence is but the intensification of a virus in the bacteriological sense. Is it not within the experience of every general practitioner that such a series frequently occurs at the beginning of an "outbreak" of scarlet fever? Is not the observation repeated year after year in different schools and communities? Is it not a fair deduction that epidemics of scarlet fever (again, I am not speaking of milk outbreaks) follow the intensification of a virus by passage through the bodies of susceptible, or, if you will, responsive persons, and that such epidemics terminate by reason of the attenuation of the virus after passage through a further series of bodies? I think there can be no doubt of it, and that the series, from a first manifestation of the virus to its disappearance, usually consists of about six cases, of which the third and fourth are commonly the most "typical" and the most severe. Put in another way, the normal cycle of epidemic scarlet fever, or so much of it as we can at present recognise in human beings, does not extend beyond a sequence of six cases. The earliest and latest are the mildest and least typical; but infective potency lessens with attenuation. Through what phases the virus may pass, or in what media it may exist after it is lost sight of, is matter for examination. It may perish; it may continue its generation in human beings with other or no clinical manifestations until intensification occurs in response to variations of the soil or other conditions; it may have an external existence, in the humus or elsewhere; it may continue through other living hosts. Observations do seem to afford evidence that the virus does, or may, pass through a phase in cattle, but whether this be a necessary part of the full cycle or only an accidental side-tracking is, for the present, pure speculation. Neither can we say whence the virus of the first intensive case comes, nor what is the relation of marked sporadic cases to the epidemic cases or those of seasonal recurrence.

I am bound to say that, if one be asked to correlate scarlet fever with any one hygienic, or rather unhygienic, factor—in the way that relapsing fever is correlated with famine, typhus with foul air, typhoid with excremental pollution, cholera with water, and plague with the soil—one would say that there does seem to be a relation between sporadic scarlet fever and dust. Certainly cases of sporadic scarlet fever have been, in my experience, seen far more frequently in dusty houses of a peculiar type than in any others. If it be true that in outbreaks of scarlet fever, and during the ordinary seasonal prevalence, there is first an intensification and later an attenuation of the virus, certain facts are at once explained. If the usual sequence be a series of 6 cases, the probable maximum duration in time of such a sequence would be about 32 weeks, and the probable shortest duration of such a sequence about six weeks. The mathematical calculation can easily be made, assuming that the period of incubation varies from two to four days in cases of direct contact, and that infective potency is usually present on the second or third day, and rarely after the sixth week in pure infections; and I think it will then be found that an outbreak ought to extend over about the eight months usually observed, and that the maximum number of cases and the greatest increase in the number of cases ought to be observed within a limit of five or six weeks. Such, indeed, is the case every year in London and everywhere else, so far as I know. It will be found, too, I believe, on inquiry that the termination of outbreaks from attenuation of the virus, and consequent loss of infective potency, is a far more reasonable explanation than is the alleged termination from exhaustion of the number of susceptible persons. In fact, the latter hypothesis can only be sustained by question-begging about what "susceptibility" really means, and it is certain, I think, that in school outbreaks the proportion of persons exposed to infection in the second stage of the outbreak who, unprotected by previous attacks, yet escape, is too high to be explained away by talk of "natural immunity." We have, too, a simple explanation of the fact that many private practitioners and laymen have a strong opinion as to the infective potency of scarlet fever. They are those who see and recognise the intensive cases, and know, too, that the cases secondary to them are more virulent than the primary ones. On the other hand, specialist hospital superintendents, who, for obvious reasons, see more recessive cases than intensive ones, do not share what they consider the exaggerated fears of the layman and practitioner, and pass from scarlet fever wards to those devoted to diphtheria or other diseases freely and with impunity. But it is the atypical, intensifying case which finds its way through mistaken diagnosis now and again to the diphtheria wards, and sets up the crop of "cross infections" which we all so justly dread.

I think, also, that I can see the explanation of the very interesting observations so recently laid before us by Dr. Milne. I do not wish to minimise the value of antiseptic applications to the throat, and shall, indeed, presently refer to the subject as of cardinal importance. But is it not clear that the cases treated by Dr. Milne with such apparent success are really recessive cases and not intensive ones? The crucial test of the value of Dr. Milne's method would be, it seems to me, not the treatment in general wards of marked cases recognised *after* outbreaks are well established, but the treatment by his method of mild, atypical, intensive cases. The application of the method should, in fact, *prevent* outbreaks in the community affected, and not merely allow demonstration of the relative impunity with which developed cases can be treated in general wards when once the virus is undergoing attenuation. Indeed, Dr. Milne's results, and the results claimed for public health administration without isolation hospitals, seem to me to have one and the same explanation. There is no doubt at all that, when once an outbreak has started, and typical cases are recognised on every hand, the outbreak will terminate with mathematical certainty, and that remarkably few so-called secondary cases will occur, whether the cases be treated in a general hospital with inunction or at home without it. But the magnitude of the outbreak, seasonal or accidental, should be compared with those in districts where the methods I propose to discuss are in vogue, and the question may well be asked, Is it certain that in cases treated at home without apparent mishap the virus may not be transmitted in forms and manners not perhaps obvious, but yet dangerous; and does not strict aseptic hospital treatment offer the greater probability of destroying the virus—of making what a fireman calls a "good stop"? In my own district I know that when, in the autumn, every notified case, however mild, is admitted to hospital we shall get through the winter well; and that our seasonal prevalence is greater when we commence with a few mild cases which are kept at home by practitioners who assume an attitude of scepticism which they think advanced. The connexion between the various cases may not be demonstrable, but the correlation of the facts is undoubted, and the conditions of the district for which I am responsible are so far peculiar that I have reason for confidence in the observation. It is possible, and indeed probable, that the phenomena of intensification and attenuation may be, in the case of diseases other than scarlet fever, manifest to those who have eyes to see and ears to hear. There are many observations, especially in the older text-books, that are deserving of collation, but I allude to them now only so far as they

incidentally support the notions I have endeavoured to express.

SOME CLINICAL FEATURES RELATING TO HOSPITAL ADMINISTRATION.

Before attempting to apply the consideration of these ideas to the practical control of scarlet fever there are some clinical features to be taken into account which are of importance chiefly from the point of view of hospital administration. I am accustomed to recognise cases of scarlet fever with tonsillar exudation, ulceration, pellicle, or membrane, as impure cases of the disease. In other words, I believe the pure scarlatinal infection gives no obvious exudation. Some cases without exudation may be, and probably are, impure infections; but this by the way. Cases of pure scarlatinal infection may vary in severity from the mildest degree to the most fatal, and no one will dispute that both the mildest and the most toxic case may run their course without any obvious exudation. Cases with exudation are to be recognised as dual, or even multiple, infections—symbioses if you will—and may be spoken of clinically as diphtherial, diphtheritic, rheumatic, septic, ulcerative, follicular, herpetic, or erysipelatous. Bacteriologically, the "plus" infection may be recognised as due to the Klebs-Löffler, the Hoffman, or the Vincent organisms; to pneumococci, to staphylococci, or to streptococci of various kinds and strains.

We have, however, to recognise, and especially in hospital, not merely the initial coincidence of two or more infections, but relapses, second attacks, and minor phenomena due to secondary infections with scarlatinal virus of perhaps another strain; and in addition the late occurrence of heterologous infections. What influence these infections, homologous or otherwise, have on the original virus is hard to say. They may, of course, modify it profoundly, and so interfere with what I have called the natural cycle of scarlet fever. I do not attach the slightest importance to peeling itself as infectious, but see no reason why flakes of epithelium should not be an excellent vehicle for the transmission of organisms derived from the mouth, nose, or ear, and to that extent I believe that skin peeling may be "infectious." So far, perhaps, the inunction of the body may be justified; but I hold it better to attack the mouth and nose directly rather than to dissipate attention to the skin; and the keynote of success in dealing with scarlet fever as it affects the individual is to regard it as an infection of the mouth (or nose) through a break of the surface, except in those rare but undoubted cases where it is found as an infection of a wound of the cutaneous or uterine epithelium. It cannot be doubted, of course, that dissemination of the specific virus may be aerial to the extent of the radius of expired droplets, or that substances and fabrics on which droplets, &c., fall can, in accordance with their suitability as a culture medium, convey infection across distances and through lengths of time. These facts are surely as obvious as are the commonplaces of the operating theatre; but it is, also, one of these commonplaces that an article sterile in itself may transfer a virus from wound to wound with disastrous results.

PRACTICAL CONTROL OF SCARLET FEVER: "BED ISOLATION."

Attempting now to deduce principles for the control of scarlet fever so far as our present epidemiological and pathological knowledge allows, one must commence with the proposition that the existence of the well-managed isolation hospital is justified as the best means of destroying the virus known to us, short of projecting the patients into space for eternity. It is quite clear that administrative control can only affect to a very limited extent the patient retained at home. The immediate removal of the patient allows for the prompt action of the public health department by way of destroying any traces of virus in the house. But the prompt diagnosis and notification of the disease, and the examination, and, so far as can be, the disinfection of persons in the house, depend on the relations between the practitioner and the health department. It is obvious that the main idea to be impressed on the practitioner is that cases are not necessarily infectious in proportion to their severity, and that the early, atypical, intensifying cases are probably those in which the virus has the highest infective potency, although the amount of virus (but not the degree of potency) may be greater in the later cases of an outbreak. Every effort, therefore, has to be made to encourage early and confident diagnosis, and the immediate transference of "first" cases to hospital, however mild or irregular they may seem to be. It is not necessary to labour the importance of each half-hour that passes between diagnosis and removal; the proof is the frequency with which secondary cases are notified in the first week. Nor should it be necessary to labour, in the interests of the hospital itself, the absolute necessity for the ambulance and its arrangements being ordered with the same degree of aseptic scrupulosity that obtains in the operating theatre of a modern hospital. Perhaps it is best not to inquire how often the ambulance of an isolation hospital is truly an aseptic one. Still, though secondary infections due to hospitalism begin in the ambulance and with the ambulance nurse it is at the hospital gates that the most obvious practical difficulties begin.

In the general hospital the only necessary basis of classification is that of sex, but in the isolation hospital we have had of late years to start with the number of prime infections we propose to treat; to double that number to give us wards for each sex and each disease; to add again for division into convalescent and acute classes; and to make yet further additions for the reception of mixed or doubtful cases, before we can arrive at the number of ward-blocks and wards necessary in the case of the particular district that has to be served. When dealing with hospitals of large size, projected to serve large districts, the proper provision of an adequate number of isolated pavilions does not give rise to great difficulty other than that of expense in building and administration, for hitherto the idea has, of course, been to provide a separate ward for each disease or combination of diseases likely to be treated, and so theoretically to provide for a number of maxima, although experience shows us that not all these maxima are likely to occur together. But in dealing with the needs of a district of, say, 40,000 or 50,000 inhabitants, the certainty that one will be lucky if allowed one bed per 1000 of the population makes the allotting and planning a task of the greatest difficulty. Naturally enough, the apparently logical solution has been to provide a separate ward for each patient, or, in other words, a series of cubicles. This plan has, for small districts, the great advantage that it allows economy in the numbers of the staff maintained, for the strict application of the old plan of "one disease, one ward-block, one staff," results not infrequently in the provision of more nurses than there are patients. The objections to the cubicle system seem to me to be two: (1) material—that of expense in construction; (2) moral—that the attention of the nurses becomes fixed on the partition as the safeguard. The barrier system adopted by Dr. J. T. Biernacki at Plaistow is free to a great extent from these objections, but the question I desire to raise is whether we may not, in small hospitals at any rate, if we get a firm grip of the real principles, safely treat all diseases side by side. I am convinced that we may. If this can be done generally, instead of having to provide for a series of maxima only one maximum needs to be provided for—the greatest total number of cases likely to need treatment at one time. This would mean probably not so often one bed per 1000 as one bed per 1500 of the population.

I recognise that the complete trial of the plan I suggest would mean the planning of a new hospital, and I have had, of course, at Mortlake, to make use of pre-existing buildings—separate pavilions separated by considerable open spaces and providing 36 beds on four acres of site. Having now three ward-blocks at my disposal, I do not deliberately place cases of scarlet fever and diphtheria side by side, but I have had to treat cases of diphtheria, typhoid fever, and erysipelas or puerperal fever in one ward, and on the admission of doubtful cases of scarlet fever or diphtheria into the wards nominally allotted to these diseases, I have not always been able to transfer them when the diagnosis has been found erroneous. But we have done away with separation between diphtheria and scarlet fever nurses, and therefore to that extent no longer separate *wards* or *diseases*. We isolate *patients* without any mechanical apparatus such as glass walls, or barriers, but by ritual observance only. It is not that one regards the transference of prime infections as a light matter; the idea is that it is as grave an affair professionally for a simple case of scarlet fever to acquire a pus infection as for a case of diphtheria to acquire typhoid or scarlet fever. Each patient, therefore, is isolated in his or her *bed* without partition or barrier. This can be done, if proper technique is observed,

as easily as it is done in the surgical wards of a general hospital every day. Nurses can then pass from block to block, ward to ward, and bed to bed as simply and harmlessly as does a surgeon from a case of empyema to a laparotomy. They relieve each other as occasion may require, give assistance to each other, and interchange quite freely. The saving in staff expense alone is very considerable, and the general results are perfectly satisfactory.

The hospital of which I have control is certainly a small one, and I cannot give statistical results of magnitude, but in the last three years we have treated 120 cases of scarlet fever with one death, 73 cases of diphtheria with 7 deaths, and typhoid fever, erysipelas, measles, rötheln, cerebro-spinal meningitis, tuberculous meningitis, puerperal fever, tonsillitis, scarlet fever and whooping-cough, scarlet fever and diphtheria, and other diseases and combinations, quite successfully. There have been no cross-infections; very few return cases; no illness (save one attack of tonsillitis treated in the diphtheria wards) amongst the staff; no relapses or secondary rashes, and very few complications. Three cases of otitis media occurred, and were perfectly healed before discharge at the end of six weeks.

Before we commenced, in 1907, the system of bed isolation, we had quite as many troubles as others, in spite of the most careful ward separation and staff separation, but we have no apprehensions now. It is true that there are certain prime requisites for this method. One is that the matron in the absence of a resident medical officer, should have the fullest control of her staff and the keenest appreciation of the ideas; and in the appointment of Miss Bellinger I have been fortunate. Another is that never should the bed-space be less than the full minimum standard of the Local Government Board; and I hold that there is no heresy so great as supposing that children require less ward-space than adults; as children they may, but as virus-holders they do not. Again, every detail of the isolation hospital ward should be on a parity with the best surgical wards, and there must be the freest use of the steriliser. The steam disinfector is one steriliser, the laundry is another, and should be worked to the utmost; but the ward sterilisers are, in small hospitals, not used as they should be.

Every patient should be kept in bed for three weeks, and for the first few days after leaving his bed should recline on a lounge separated by a few feet from others. We give to each one on admission a complete outfit, kept on his locker, of porcelain tray, kidney bowl, spitting mug, receiver, spray or syringe, thermometer in glass vase, glass spatula and toothbrush in glass vase, feeder, medicine glass, brush and comb, and other articles. These are all kept during the whole illness for the patient's exclusive use, and are frequently sterilised by appropriate methods, being, of course, again sterilised or, if necessary, destroyed at the end of the illness. The spatula, thermometer, and toothbrush are kept continuously in izal solution, and the same substance shaken up with water or paroleine is used for spraying, syringing, or douching the mouth, nose, &c., every four hours during the first week, and three times a day later. No nurse passes from one prime infection to another without first disinfecting her hands and donning a special ward overall kept for the purpose, and, of course, disinfecting her hands afterwards. Certain cases of doubtful nature and special or mixed cases are marked by a warning tab affixed to the bed card, and for each of these cases a special overall is used. In addition to the washing of the hands required from everyone on leaving a ward, disinfection for each case is required and made easy by the placing of a stand with solution, towel, &c., at the foot of each "special" bed, or between the beds of each two or three simple cases, while rubber gloves are used in dressing wounds or attending to puerperal cases. All this means little trouble really, and is amply repaid by the knowledge that security is obtained thereby. The system can be further elaborated, but, of course, in a small place one has to go slowly and acquire material by degrees. No doubt those who believe in inunction and swabbing with oils will say that much of this is unnecessary. No doubt it often is, for recessive cases, so far as the obvious propagation of the disease is concerned; but it is the virus from the intensive cases we want particularly to destroy, and the ritual must therefore be unhesitatingly employed. No doubt many others take just as much care as we do, and with even better results. It is rather to the principles than to the practice that I desire to attract attention. I feel confident that if the principles are grasped we shall be able to handle our cases far more boldly than we do at present; and if, indeed, further experience justifies us in mixing our cases more freely, we shall undoubtedly require from municipal authorities less expenditure, at any rate in districts of moderate size, since not only the administration but the construction and size of isolation hospitals will be modified. If we can show better and cheaper hospital results we shall be able to tune up to a higher pitch of efficiency and, until pathological research or clinical observation gives us more knowledge and shows us a still better way, bring scarlet fever under fuller control. I may perhaps say that, although I have to deal with a district which in 1896 had a population of 16,200, and now has one of 31,000, with all the changes that attend increase and urbanisation, still the occurrence-rate of scarlet fever has gradually fallen from 3·5 per 1000 in the quinquennium 1896–1900 to 1·6 per 1000 in the last four years.

I am greatly obliged to you, Sir, and the members of the Section for your kind hearing. It should perhaps be said that since these notes were written I have become aware that Dr. Chapin, of Rhode Island, U.S.A., has written an essay, to which has been awarded a Fiske Memorial Prize, in which he advocates the treatment of scarlet fever, in general fever wards, on much the same lines as those I have described. I have not yet been able to obtain a copy of this essay, but am gratified to know that I am not quite alone in holding these beliefs. I ought, too, to express my indebtedness to the valuable and stimulating paper read by Dr. Butler before the members of this Section in November, 1908.

A Lecture
ON
THE SURGICAL TREATMENT OF DUODENAL ULCER.

Delivered at the Post-Graduate College, Hammersmith, on Jan. 19th, 1910,

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GENTLEMEN,—Before discussing the question of surgical treatment I wish to make a few remarks on the

POSITION, CAUSES, AND SITUATION OF DUODENAL ULCERS.

The *position* of the ulcer is practically always in the first part of the duodenum above the point of entry of the common bile duct; in cases in which perforation occurs the ulcer is nearly always on the anterior wall, and in cases in which pain and hæmorrhage are the prominent symptoms the ulcer is situated on the posterior wall.

The position of the ulcer with relation to the entry of the common bile duct is interesting, as the portion of the duodenum between the pylorus and the bile duct papilla is the only part of the intestinal tract which is subjected to the irritation of acid gastric products before they are mixed with, and neutralised by the bile. It is noticeable that cases of duodenal ulcer are always accompanied by hyperchlorhydria, so the ulcer may be considered as a sort of burn caused by the intensely acid gastric juice. Some, however, maintain that the hyperchlorhydria is the effect and not the cause of duodenal ulcer.

The actual ulcer may be started by a thrombosis of a minute vessel destroying the vitality of a portion of the mucous membrane, by injury due to the passage of a rough particle of food or by septic infection, the usual source of such infection being the teeth or gums.

The size of the ulcer varies from that of a split pea to about the size of a shilling; it is rarely larger than this unless two ulcers have existed close together and have coalesced. When on the posterior wall of the duodenum it is usually indurated and is often deeply excavated, and the ulceration may extend into the pancreas and cause hæmorrhage by erosion of one of the pancreatic arteries.

DIAGNOSIS.

With regard to diagnosis, there is no doubt that the

principal and often the only symptom of duodenal ulcer is *pain*. The pain is usually severe and in many cases comes on two to four hours after food. This pain is often relieved by taking food. Closely allied to this pain, which is relieved by taking food, is the so-called hunger pain, which consists in an irresistible craving for food, together with pain, which is temporarily relieved by eating; patients with this symptom will have food by their bedside at night and will carry meat lozenges or chocolate about with them. I have noticed that the hunger pain has a tendency to return within an increasingly shorter time of taking food and to be less relieved by food.

The old explanation of this symptom was that the pain was due to the acid gastric juice passing over the ulcer when the pylorus was open, but that as soon as food was swallowed the pylorus contracted and no more gastric contents were allowed to pass through the pylorus till gastric digestion was complete, and so the ulcer was not irritated during this period. This explanation, however, does not appear to be correct, as gastric juice is not secreted when the stomach is empty and requires the stimulus of food to excite it. Moreover, the presence of hyperacid gastric juice causes a spasm of the pylorus and so prevents its escape. The real explanation probably is that when the stomach is empty it contracts and pulls upon adhesions about the base of the ulcer. Moreover, I have noted that the cases in which hunger-pain is marked the ulcer has usually been on the posterior wall of the duodenum and has been adherent to the pancreas.

The pain in duodenal ulcer is generally referred to the epigastrium, and is described as boring through to the back to a point just to the right of the last dorsal spine; there is usually a tender spot about one inch above and to the right of the umbilicus, and often hyperæsthesia to the right of the last dorsal spine behind. In conjunction with the tender spot we often find some rigidity of the right rectus muscle, this symptom being most important and indicating either a duodenal ulcer or an irritated gall-bladder.

The next symptom of importance is unexplained *anæmia*, this, of course, being due to repeated minute hæmorrhages from the ulcer which are not sufficient in quantity to produce melæna. Anæmia, in an otherwise healthy adult, points to duodenal ulcer or malignant disease. Headache, inability to do business, and obscure mental symptoms are often associated with duodenal ulcer. Such cases are difficult to diagnose.

No further symptoms may develop for some time, and all may clear up, leaving the patient in perfect health for months or even years; the symptoms, however, practically always return and the recurrence can usually be traced to a chill or to indiscretion in diet. Sooner or later complications occur, the ulcer may perforate, it may bleed, or cicatricial contraction may occur in the duodenum.

Perforation often occurs quite early in the disease, and even without any previous history of pain; the ulcer is nearly always on the anterior surface. The symptoms are more or less familiar; there is most acute abdominal pain accompanied by the signs of abdominal shock—namely, rapid, feeble pulse, subnormal temperature, sweating, facies Hippocratica, and vomiting which is often blood stained. The abdomen is retracted at first and is always rigid and does not move on respiration, there is tenderness, and the rigidity is most marked over the upper part of the right rectus muscle; later there may be diminution of liver dulness and signs of free fluid in the abdomen. When the perforation takes place on the posterior surface of the duodenum there will be no general peritonitis but a subphrenic abscess will form.

Turning now to *hæmorrhage* the symptom of a severe bleeding may simply be sudden blanching and fainting, as the blood may all pass into the intestine, and melæna will not appear for 24 hours. In some cases the blood may regurgitate into the stomach and may be vomited in enormous quantities. In cases with a severe hæmorrhage there is usually a more or less long history of an ulcer, and pain has been a prominent symptom.

The symptoms of *cicatricial contraction* of the duodenum occur at a later stage of duodenal ulcer, and seldom occur except in ulcers of large size which are situated on the anterior or lateral walls of the duodenum. The train of symptoms which then arise are vomiting, dilatation of the stomach, and emaciation. Vomiting is not a usual symptom of duodenal ulcer in the early stages and only occurs in cases of pyloric spasm due to hyperchlorhydria.

In the examination of a case of duodenal ulcer it is desirable to ascertain whether the stomach is dilated and to test chemically the gastric contents. The outlines of the stomach may also be ascertained by examination with X rays after a bismuth meal.

Results of Medical Treatment.

The next point to consider is whether medical treatment can effect a permanent cure in a case of duodenal ulcer. It is certain that starvation and various other methods can cure the ulcer for a time, but the cicatrix is not strong and easily breaks down again. Moreover, the starvation treatment is very irksome. In view, therefore, of the certainty of recurrence after medical treatment, the unpleasantness of this treatment, and the gratifying results after operation I am inclined to recommend gastro-enterostomy in every case of duodenal ulcer where a diagnosis has been made.

Surgical Treatment.

The first operation to be considered is that for a perforation of a duodenal ulcer. Here there is no question about the absolute necessity for an immediate operation, and the results will depend principally upon the time which has elapsed between the perforation and the operation. I would remind you again that the previous history of an ulcer may be quite indefinite or even negative, because perforation often occurs early in the history of an ulcer when it is situated on the anterior surface of the duodenum.

The surgical treatment of a perforated duodenal ulcer consists in (1) closing the perforation; (2) doing a gastro-enterostomy when necessary; (3) cleansing the peritoneal cavity and providing drainage when necessary; and (4) in combating the shock which is present. (The operation was described in detail.) The chief points to consider are: (1) whether to do a gastro-enterostomy; (2) whether to drain the peritoneal cavity and to flush it out; and (3) the method of treating shock.

1. Gastro-enterostomy should only be done in cases where closure of the perforation causes contraction of the lumen of the duodenum.

2. In very early cases it is not necessary to drain the peritoneal cavity and it should not be irrigated; simple sponging out is sufficient. In cases when the perforation has existed for some time the abdomen should be drained by counter openings in each loin and by another above the pubes or in the rectum; when the drainage-tubes are in position the abdomen should be flushed out with saline solution.

3. To overcome shock an intravenous saline infusion is carried out during the whole operation; 10 to 15 minims of adrenalin chloride is usually added to the saline; two or three pints are infused.

The next class of case requiring operation is that in which one or more *severe hæmorrhages* have occurred; here the important point to decide is when to operate. When the patient is blanched and almost pulseless immediately after a hæmorrhage there is no chance of success; it is therefore better to wait for seven to ten days for the patient to recover somewhat from the loss of blood; if we wait longer than this there is a risk of further hæmorrhage as soon as the normal blood pressure is restored. I have several times seen a second hæmorrhage occur whilst we have been waiting for the patient to recover from the effects of the first. If a second hæmorrhage occur we should not wait more than four days before operating.

The operation consists in performing gastro-enterostomy and preventing further bleeding. If the ulcer is on the anterior surface a purse-string suture is passed round the circumference of the ulcer on its peritoneal surface; this when tied constricts the ulcer and effectually stops the bleeding. The constricted ulcer is then invaginated into the duodenum with a row of Lembert sutures. If the ulcer is on the posterior surface of the duodenum the anterior wall of the gut opposite the ulcer is invaginated into the gut with three rows of Lembert sutures, forming a firm pad which presses on the ulcer, prevents any further bleeding, and occludes the passage through the duodenum.

In any case of hæmorrhage gastro-enterostomy is required, and to combat the shock intravenous saline infusion should be carried out during the operation, as much as five or six pints being introduced.

In *cicatricial contraction* of the duodenum a simple gastro-enterostomy is all that is required and occlusion of the pylorus or duodenum is not necessary. Except in very debilitated patients saline infusion will not be required.

In *uncomplicated* cases of duodenal ulcer the operation consists of a posterior gastro-enterostomy combined with occlusion of the pylorus, the effect of such an operation being effectually to prevent any of the gastric contents from ever passing over the ulcer again. The ulcer when once healed is permanently cured. When gastro-enterostomy alone is done the new opening overcomes any dilatation of the stomach, due to spasm of the pylorus, and allows the ulcer to heal; after a time, however, the gastric contents will again pass through the pylorus and the ulcer may recur. The pylorus is occluded by three rows of Lembert sutures placed one over the other; this will be found to completely invaginate the duodenum on itself and to occlude the pylorus.

The *after-treatment* of cases of operation for duodenal ulcer does not vary very much, whatever has been the nature of the case beforehand. In the first place, all patients should be placed in the Fowler position as soon as the immediate shock of the operation has passed off. This is specially important in cases of perforation, since should any leakage occur when the patient was in the recumbent position the fluid would track into one of the subphrenic spaces, forming a highly dangerous subphrenic abscess, whereas if the patient is in the sitting position any fluid will track into the pelvis, where an abscess is comparatively harmless and easily treated.

The next point in treatment is to keep up the normal saturation of the body tissues. A patient requires about three pints of fluid in the 24 hours. If this amount of fluid can be taken by the mouth all is well, but during the first few days after a stomach operation only a small quantity is allowed by the mouth, so the balance must be introduced in other ways. My practice is as follows. For the first 24 hours 10 ounces of saline solution, in which is dissolved half an ounce of glucose, are given by the rectum every four hours. For the first 12 hours teaspoonfuls of hot water are given occasionally; after 12 hours, barley water, albumin water, and raisin tea are given in half-ounce doses every hour; after 24 hours the dose is increased to 1 ounce, after 36 hours to 2 ounces, and after 48 hours to 3 ounces every 2 hours. The amount and number of saline injections are proportionately reduced. Semi-solids are given on the fourth day and chicken or fish on the fifth day. When there is much shock 1-60th grain of strychnine is given hypodermically every 4 hours, and if the patient is in much pain or is restless, a quarter of a grain of morphia with 1-120th grain of atropine is injected on the first night after the operation. It should not, however, be repeated. In uncomplicated cases the patient is kept in bed for a fortnight, and usually leaves the hospital within three weeks.

Results.—In cases of perforated ulcer the result depends almost entirely on the interval which has elapsed between the perforation and the operation; cases operated on within six hours of perforation practically always recover, those within 12 hours recover in most cases, and beyond this time the prognosis is doubtful.

In cases of hæmorrhage the prognosis is always grave, as the condition is desperate, and though operation holds out a good hope of success, the mortality will always be from 10 to 15 per cent.

In operations for cicatricial contraction the results are most successful; the mortality is practically nil, except in debilitated patients. In no class of stomach operation are the results so good, as the patients regain perfect health.

In cases of ulcer without urgent symptoms the mortality is slight and is confined to accidents such as pulmonary embolism, &c.; the permanent results are most satisfactory, in my own cases 85 per cent. are completely cured, and the remainder derived great benefit. In my earlier cases I had some trouble from vicious circle, but these were cured after an entero-anastomosis. I have also had two recurrences after simple gastro-enterostomy; but I have not had any since I have occluded the pylorus in addition to the gastro-enterostomy.

In conclusion, the surgical treatment of duodenal ulcer is urgently demanded in cases of perforation, severe hæmorrhage, and of cicatricial contraction; it is much to be desired in every case of duodenal ulcer whenever the diagnosis is made.

THE RESULTS OF RE-MINERALISATION IN CONDITIONS OF FAULTY METABOLISM, SUCH AS NEURASTHENIA, &c.

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IN THE LANCET of April 18th, 1908, p. 1136, I published a paper entitled "Observations on Blood Pressure, Chlorine Retention and Dechlorination, Hyperacidity, and Variations in the Starch Ration," in which were recorded the results of a series of analyses made to elucidate certain practical problems in metabolism. The present paper is a continuation of that work. The problems dealt with are those concerned with the art of the adaptation of cases with the various factors of environment, and it will be seen that the measurements made for diagnostic purposes or as landmarks on the road to recovery have been necessarily limited to those that can be made by a single individual in a day. I have found it necessary to make continuous observations for long periods of time, as the difficulty in the interpretation of one or two analytical observations is almost insuperable without some sort of measurable, positive knowledge as to the origin of the condition and the course it must take in recovery. A little consideration shows the great difficulty there is in the employment of the numerous devices at one's disposal for the purpose of not only presenting to the patient the necessary chemical elements of the protoplasm in their optimum proportion and quality, but to be able to prescribe the duration of the treatment and to supply favourable factors of environment. The circumstances favouring either retention or the discharge of chlorine afford a comparatively easy method of ascertaining these data; even by the employment of the meagre resources at my disposal the results have been unexpectedly successful.

The observations recorded below have been made mainly with the object of answering the following questions: 1. Is it possible to arrive at a numerical formula indicating the "state of matter" of the somatic protoplasm? 2. Is chlorine retained in the tissues so as to preserve the balance of colloids and crystalloids when there is a deficiency of phosphorus? 3. Which observations can be relied upon as a guide to successful treatment and the limit of its duration? In Case A a group of characteristic measurements were found that showed no indication of variation and instability till a "re-mineralising" mixture was added to the ration. I have been successful in causing the elimination of parenchymatous chlorine, and in altering the tissues so that its tendency to retention is either lost or considerably diminished. The following are the case records on which my thesis rests:—

CASE A.—A man, aged 42 years, who had suffered for some years from constipation and neurasthenia. He had been obliged to relinquish his occupation for over five years. He was not easily fatigued by physical exercise and found no difficulty in walking ten miles. He had noticed that he had sweated with difficulty and in insignificant quantities for some years. The most conspicuous symptoms were mental, even letter-writing presenting an almost insuperable difficulty. The extent of the patient's preoccupation with his infirmities was such that he could talk and think of nothing else. He had a fairly good appetite, he took a very small amount of fluid during the day and had a noticeable distaste for salt, not taking it, for instance, with his eggs. He was emaciated and suffered from Glénard's disease. The blood pressure was between 85 and 90 and the temperature was 96° F. After fitting the patient with a Glénard's belt and keeping the colon empty with oil enemata, the following ration was given and persisted in till the end of the treatment. 1. Proteid; it was particularly insisted on that all proteids should be absolutely fresh; red beef-steak was given at least once a day, mutton, lake trout, and chicken were given occasionally. They were always weighed after cooking for the purpose of tabulating their amounts. 2. Fats; as much fresh butter was given as possible. 3. Starches; biscuits, pulled bread, crusts, and toast, were allowed, while

soft, pulpy starches were forbidden. It is essential in treating these conditions to give the optimum starch ration (in Case A it was from 50 to 75 grammes), avoiding on the one hand the evil effects produced by the absorption of fatty acids from the faulty digestion of an excessive ration in the intestinal canal, and, on the other hand, the disadvantage of an insufficient ration. Fortunately the practice of poltophagic mastication[1] appears to be a most delicate indicator of the optimum ration; it may even be said to give evidence of temporary or permanent general conditions. Thus, in states of extreme fatigue it will be found that the poltophagic mastication of starch may be lost in consequence of the meagre flow of saliva, even though thirst has been satisfied throughout the course of the work causing the fatigue. It is recognised even among starch feeding populations that the power of starch digestion diminishes as the day advances. I remember seeing a remarkably fine specimen of a peasant woman who had been successfully nursing her daughter and granddaughter providing an abundant supply of milk; in addition to this feat she received the respectful admiration of several villages in that she was able to eat a large dish of potatoes in the evening without inconvenience. 4. Salt; the patient was directed to eat as much as he wished, and was informed that as he improved he would eat more salt, and that if he took a larger ration it would not interfere with the elimination of his retained chlorides. Green vegetables, milk, and fruit were omitted from the ration mainly for reasons of expediency, the patient having been under special medical treatment for his stomach condition for some time. In addition to this the colon had passed from the spastic into the atonic state, when it is often advantageous to reduce the bulk of the ration. After a period of six days (No. 1 in the table), during which observations were made enabling me to obtain the data for comparison with the subsequent observations, the following remineralising substances were administered as an additional ration: (1) 0·2 gramme of iodine in organic combination; (2) from 1 to 3 grammes of magnesium oxide and calcium carbonate; and (3) about 1·5 kilogrammes of mixed vegetables (cabbage, onions, carrots, leeks, sage, celery, &c.) which were finely divided, crushed, boiled for three or four minutes, and kept in a Norwegian stove for ten hours, the resultant mixture being strained and concentrated to about a wineglassful.

TABLE I.—*Case A. Ration Scale and Consequent Observations.*

Observation numbers corresponding to those in Table II.	Ration. Proteid (grms.)	Starch (grms.)	Fat (grms.)	NaCl (grms.)	Eggs.	Temperature. Mouth (° Fah.) M. and E.*	Rectum (° Fah.) M. and E.	Body weight (kilos.) N. and M.†	Blood pressure (Mm. Hg) M. and E.	Exercise (miles).	Weight lost per hour at night (grms.)	Liquid ingested approximately (c.c.)
3‡	—	—	—	—	—	97·2 97·2	98·7 98·9	54·5 53·75	—	—	41	775
4	265	73	151	1·7	3	97·9 97·9	99·1 98·9	55·0 54·5	108 108	2½	29	725
5	256	72	191	1·7	3	97·7 98·7	98·7 99·1	56·0 55·25	114 116	3½	31	775
6	328	70	204	1·7	3	98·1 98·3	99·1 99·1	57·0 56·5	113 115	2½	35	825
7	283	65	205	1·7	3	98·3 98·3	99·3 99·1	57·5 57·0	114 118	4	31	775
8	155	45	158	1·7	3	98·7 98·7	99·7 99·7	58·0 57·75	118 116	3½	35	775
9	171	40	123	1·7	2	98·5 98·5	99·5 99·3	56·75 56·25	110 115	3½	37	775
10	243	59	181	1·7	3	98·5 98·3	99·1 99·1	58·5 58·0	110 115	5	27	875
11	195	47	175	1·7	3	98·5 98·3	99·1 98·9	59·0 58·5	112 118	4	35	825
12	206	55	193	1·7	3	98·3 98·1	99·1 99·1	59·5 58·75	110 114	5½	35	825
13	206	57	178	1·7	3	98·3 98·1	99·1 99·1	60·0 59·75	110 115	6	33	825
14	183	57	171	1·7	3	98·3 97·9	99·1 98·9	60·75 60·25	111 114	7	23	875
15	226	53	180	1·3	3	98·1 98·1	99·1 98·9	61·75 61·0	108 116	4	39	925
16	216	60	186	1·3	3	98·3 98·3	99·1 99·1	62·5 61·75	114 118	9	43	975
17	201	52	214	1·3	2	98·3 98·1	99·1 99·1	62·5 62·25	110 115	4½	39	825
18	200	62	170	1·3	2	98·1 97·9	98·9 98·7	61·5 61·0	115 120	6	33	925

* M. and E. = Morning and Evening.
† N. and M. = Night and Morning.
‡ With regard to Nos. 1 and 2 no observations were made.

The ration of iodine is especially useful in conditions where the specific gravity of the urine is low and where there is an abnormal amount of NH_3.

The main indications that I have followed in the administration of calcium are a blood pressure under 100 or a large loss of calcium in the urine. Magnesium, which Loeb[2] has described as having dynamical properties similar to those of calcium, is probably useful for the purpose of facilitating the solution of calcium oxalate[3] and to supply its deficiency in the tissues, whence it may have been slowly abstracted by oxaluria. There appears to be some evidence that magnesium plays an important part in metabolism; on this point Gaube du Gers[4] writes: "In that condition of retarded nutrition with its protean symptoms called neurasthenia a state of demineralisation is present—that is to say, relative mineral starvation. This deficiency in the mineral elements of the soil is not due to feebleness of the tissues, but owing to demineralisation healthy metabolism is impossible." According to this author and Deschamps,[5] who has made practical use of this principle in the treatment of neurasthenia, the element that is conspicuously deficient is magnesium, which they state is an important constituent of the nervous tissues, especially the grey matter. They state also that magnesium diminishes in the urine during intellectual efforts and increases afterwards. The vegetable salts were given mainly for their potassium, which Bunge[6] found to expel chlorine from the tissues. It is interesting to recall that vegetable salts are an indispensable ingredient of the ration of the starch feeding populations both in the South of Europe and in many parts of Asia. Fresh fruit juices, especially grapes, or vegetables boiled in milk and strained, are useful alternatives. Such mixtures are most useful in nervous, irritable conditions with insomnia.

In order to record the variations resulting from the treatment a number of observations were made twice daily, each result recorded in the tables being an average of six observations. Among the factors of the tables will be found the loss of weight per hour at night. This is obtained by weighing the patient at night and in the morning, then dividing the difference between the two by the number of hours after subtracting the weight of the urine, the resulting number will show variations between 10 and 100 grammes an hour. I found in my own case when I was losing from 75 to 100 grammes an hour, the ingestion of a gramme of calcium carbonate at night would be followed by a considerable decrease in the weight lost which was accompanied by a diminution in the appetite for breakfast. This observation was frequently repeated; it raises an interesting point as to the cause of the excess carbon ration found in conditions where fat is being stored, as in the early stages of toxæmia preceding hibernation. If it is due to a "holding up" or precipitation of the calcium ions by combination with organic acids which Loeb[7] showed to occur in his observations, it would link up this phenomenon with the immediate and striking effects of phosphoric acid on heart failure and palpitation[8] (which are also favourably affected by calcium chloride) and fatigue sensations that are so frequently found

[1] Higgins: Is Man Poltophagic or Psomophagic? THE LANCET, May 20th, 1905, p. 1334. The soft palate in man and the poltophagic animals is an organ for the digestion of starch in the mouth. Prolonged conscious mastication, with the rejection of fibrous material (except in those cases that have atonic colons, when used with care) does harm by causing coprostasis from atrophy of the muscular coat of the bowel from disuse when continued for too long a period of time.

[2] Loeb: The Dynamics of Living Matter, pp. 79–80.
[3] Von Noorden: Metabolism and Practical Medicine, vol. iii., p. 1047.
[4] Gaube du Gers: Cours de Minéralogie Biologique, p. 209, Paris, 1897.
[5] Deschamps: Les Maladies d'Energie, p. 162 et seq., Alcan, Paris, 1908.
[6] Bunge: Physiological and Pathological Chemistry, p. 120.
[7] Loeb: Op. cit., pp. 79 and 80.
[8] Higgins: Op. cit., p. 1141.

TABLE II.—*Case A. Record of Urinary Analyses, each number being an Average of Six Observations.*

Number.	Dates.	Volume, D. and N.*	Total volume.	Specific gravity.	Solids, D. and N.	Total solids.	Chlorides, D. and N.	Total chlorides.	Urea, D. and N.	Total urea.	Ammonia, D. and N.	Total ammonia.	Uric acid, D. and N.	Total uric acid.	P_2O_5, D. and N.	Total P_2O_5.	Earthy phosphates, D. and N.	Total earthy phosphates.	Magnesium phosphate, D. and N.	Total magnesium phosphate.	Calcium phosphate, D. and N.	Total calcium phosphate.	Calcium ppt. by NH_3.	Calcium in NH_3 filtrate, D. and N.	Total calcium in NH_3 filtrate.	Acidity in grms. oxalic acid, D. and N.	Total acidity in grms. of oxalic acid.
1	July 28th August 2nd	250 241	471	1026 1026	13·7 14·3	28·1	2·46 2·33	4·79	7·08 7·08	14·1	—	—	·255 ·275	·530	0·87 0·79	1·66	·336 ·322	·658	·098 ·112	·210	·138 ·244	·382	·454	·22 ·205	·425	1·66 1·54	3·2
2	,, 3rd ,, 8th	332 501	833	1024 1020	17·8 20·7	38·5	4·52 4·71	9·23	7·29 9·13	16·4	2·68 2·63	·521	·269 ·259	·528	0·59 0·67	1·26	·258 ·354	·612	·146 ·242	·388	·154 ·125	·279	·437	·171 ·157	·328	1·16 1·59	2·75
3	,, 9th ,, 14th	296 480	776	1027 1022	18·0 21·9	39·9	3·54 4·35	7·89	7·96 11·1	19·0	2·47 2·68	·515	·231 ·371	·601	1·00 1·06	2·06	·41 ·583	·993	·252 ·308	·560	·158 ·258	·416	·411	·172 ·224	·396	1·2 0·88	2·08
4	,, 15th ,, 20th	396 531	927	1027 1023	21·3 29·9	51·2	3·97 5·3	9·27	8·2 12·47	20·6	2·58 3·92	·650	·247 ·403	·650	0·74 0·96	1·7	·434 ·568	1 002	·218 ·396	·614	·18 ·186	·366	·551	·108 ·267	·375	0·92 1·13	1·92
5	,, 21st ,, 26th	303 403	706	1031 1028	22·8 25·8	48·6	3·57 3·41	6·98	9·2 13·3	22·5	·19 ·247	·437	·298 ·316	·614	1·09 1·07	2·16	·507 ·632	1 139	·234 ·387	·621	·134 ·170	·304	·34	·116 ·168	·284	1·33 1·59	2·92
6	,, 27th Sept. 1st	498 458	946	1028 1023	26·8 27·6	53·4	4·71 4·08	8·79	12·5 10·9	23·4	—	—	·398 ·372	·770	1·1 1·02	2·12	·737 ·51	1·247	·313 ·34	·653	·247 ·25	·497	·452	·14 ·086	·226	1·23 1·45	2·68
7	,, 2nd ,, 7th	530 333	923	1028 1025	27·8 21·3	49·1	4·96 4·33	9·19	11·4 10·26	21·6	·2 ·214	·414	·356 ·309	·665	1·22 1·0	2·22	·596 ·539	1·135	·42 ·32	·74	·267 ·203	·47	·27	·087 ·089	·176	1·37 1·37	2·74
8	,, 8th ,, 13th	353 325	678	1028 1025	22·6 18·0	40·6	3·31 3·22	6·53	11·16 10·1	21·2	—	—	·303 ·271	·574	1·21 0·92	2·13	·283 ·271	·554	·142 ·131	·273	·141 ·136	·277	—	·097 ·081	·178	1·17 1·4	2·57
9	,, 14th ,, 23rd	323 318	641	1029 1027	19·8 18·7	38·5	2·61 3·00	5·61	10·3 10·3	20·6	—	—	·26 ·255	·515	1·34 1·13	2·47	·266 ·268	·524	·078 ·054	·161	·169 ·174	·343	—	·673 ·03	·103	1·76 1·47	3·23
10	,, 24th ,, 29th	333 398	731	1030 1024	22·9 21·3	44·2	3·43 3·19	6·62	9·9 11·3	21·2	—	—	·336 ·291	·627	1·46 1·23	2·69	·261 ·373	·634	·103 ·165	·268	·158 ·195	·353	—	·106 ·093	·199	2·08 2·11	4·19
11	,, 30th Oct. 5th	328 341	669	1030 1025	27·4 23·9	51·3	4·16 3·05	7·21	11·8 10·8	22·6	—	—	·277 ·367	·644	1·64 1·51	3·15	·26 ·314	·574	·169 ·174	·343	·178 ·119	·297	—	·175 ·124	·299	—	—
12	,, 6th ,, 11th	353 346	699	1030 1024	24·9 16·8	41·7	4·02 2·82	6·84	10·7 10·4	21·1	—	—	·352 ·295	·647	1·32 1·08	2·4	·344 ·405	·749	·205 ·209	·414	·196 ·201	·396	—	·155 ·142	·297	2·62 2·0	4·62
13	,, 12th ,, 17th	345 341	686	1029 1025	22·5 18·0	40·5	4·27 2·64	6·91	9·6 9·2	18·8	—	—	·298 ·273	·571	1·34 1·24	2·58	·332 ·358	·67	·222 ·232	·454	·109 ·107	·216	—	—	—	1·68 1·66	3·34
14	,, 18th ,, 23rd	391 403	794	1028 1023	24·9 19·4	44·3	4·64 2·85	7·49	11·2 9·1	20·3	—	—	·34 ·312	·652	1·53 1·09	2·62	·415 ·407	·822	·203 ·195	·398	·179 ·214	·393	—	—	—	1·63 1·84	3·47
15	,, 24th ,, 29th	396 363	759	1028 1025	26·1 17·6	43·7	5·0 3·06	8·06	9·6 8·3	17·9	—	—	—	—	1·06 0·9	1·96	·409 ·409	·818	·148 ·283	·431	·293 ·173	·466	—	—	—	1·29 0·7	2·99
16	,, 30th Nov. 4th	430 380	810	1030 1028	29·2 25·5	54·7	6·49 4·2	10·69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	,, 5th ,, 10th	370 340	710	1030 1027	26·3 20·6	46·9	6·43 3·92	10·41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	,, 11th ,, 18th	343 284	627	1030 1025	23·3 16·2	39·5	6·35 2·11	8·46	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* D. and N. = Day and Night.

in the more acute phases of these conditions. It may be stated generally that it is better to keep this measurement under 50 grammes during treatment; it seems to show a higher degree of protoplasmic activity. As there is a tendency to lose the breakfast appetite for starches when this measurement is low, I have asked myself whether under these circumstances there is not an increased formation of glycogen from fat with fixation of oxygen. Bouchard[9] has recorded an actual increase in weight from this cause in the human subject and animals during a short period of time. Albumin, though frequently looked for in the urine, was not present in this case. With the exception of those occasions when there was either a small precipitate of calcium or an absence of precipitate in the filtrate after precipitation with ammonia, there was a copious precipitate with Fehling that took from 10 to 20 minutes to show itself, and though there was no fermentation with yeast Professor Zanoni of Milan found pentose with a trace of glucose.

It will be seen that two separate analyses have been made for the 12 hours preceding and following bed-time. The object of this is to compare the variations of the elimination of the urinary solids in the working and resting hours. The normal $\frac{\text{day}}{\text{night}}$ quotient, as it has been called, is between 2 and 3 for all the urinary solids. Very little work has been done on this subject. Leathes[10] showed that even in the case of uric acid (which is always found to have the lowest $\frac{\text{day}}{\text{night}}$ quotient of the urinary solids) there is a diminution of 50 per cent. in rate of excretion during the resting hours. Mr. Castellain analysed his own urine and that of a neurasthenic patient with whom he was travelling for some weeks. He very kindly showed me the figures; in his own case the average quotient for solids, urea and chlorides, was about 3; in that of the patient from 0·8 to 1·2. I have used the phrase decreased velocity of the metabolic traffic in order to express the condition showing a low $\frac{\text{day}}{\text{night}}$ quotient so as to be able to emphasise the fact that there is no evidence to convict one organ, or group of organs, more than another, but rather there is every indication of a general condition affecting all the tissues equally.

The results of the treatment analytically were as follows—Chlorides: the salt ration was controlled by using dried salt kept in a glass-stoppered bottle, which was weighed at intervals. Before the mixture of minerals was added to the ration the average output for six days was 4·79 grammes, which was calculated as the amount of the full ration—viz., the average added ration, together with the unestimated chlorides contained in the food. The output rose to 8·44 grammes the day after the re-mineralising mixture was taken. Observations were made from July 28th to Nov. 16th, the total dechlorination being estimated at 396 grammes. On Oct. 31st 15·09 grammes were eliminated, and on Nov. 8th 16 grammes, the patient was ingesting 1·5 grammes of added sodium chloride. These observations were made 89 and 97 days respectively after commencing treatment. During this time the output of the ordinary constituents was increased as follows: Urea, from 2·2 to 8·4 grammes in excess of the amount eliminated during the first period of six days, phosphoric acid up to 1·49 grammes, magnesium phosphate 0·443 gramme, and uric acid 0·307 gramme.

The increased velocity of the metabolic traffic as shown by the variations of the $\frac{\text{day}}{\text{night}}$ quotient was modified as follows: as regards the volume, it will be noted that as the specific gravity of the night urine was always lower than that of the day the quotient was not higher than 1·2; solids, 1·4; chlorides from 0·7 to 3·0; for the urea from 0·7 to 1·4; phosphoric acid being from 0·7 to 1·4.

With regard to the relationship of one constituent with another, it was found that $\frac{\text{uric acid}}{\text{phosphoric acid}}$ varied from 4·2 to 2·2 (normal 2·2); $\frac{\text{urea}}{\text{chlorides}}$ commenced at 1·2 and reached 4·4; it remained normal from period No. 10 to No. 15 (normal 2·9); $\frac{\text{urea}}{\text{phosphoric acid}}$ started at 3·5 and reached 14·5 (No. 5); from No. 6 to 15 it varied between 8 and 10 (normal 10); $\frac{\text{chlorides}}{\text{phosphoric acid}}$ varied from 2·2 to 7·5 (normal 4). As will be seen by the records, there was an improvement in all directions; the patient sweated with exercise though the weather was colder. It is to be regretted that illness made it impossible for me to continue the observations till the dechlorination was complete.

CASE B.—This is my own case, and is in continuation of the notes in THE LANCET.[11] The record can be divided into three divisions: (1) observations made during the periods Nos. 1 to 10 (during this division 2·0 grammes of calcium carbonate and magnesium chloride were taken morning and evening); (2) a time of unusually hard work during which the magnesium and calcium were discontinued (this is included in Nos. 11 and 14 in the records); and (3) from Nos. 15 to 20 there was exceptionally hard work, a similar quantity of vegetable salts as those administered in Case A were taken, with 0·2 gramme of iodine in organic combination.

Chlorides.—Two balances were made, the first at the end of two days and another similar to that in my first paper (alluded to above) at the end of ten days. In the case of the two-day balances during time included in the first division there was a total retention of only 31 grammes, in the second 5·9, and in the third 19 grammes. The amounts eliminated and recorded in the chloride balance table were made every ten days. The small totals on the side of elimination can be accounted for by retention during periods of unusual exertion. Thus the increased eliminations during Nos. 13 and 14 can be accounted for by three exhausting journeys to England in three weeks with bad cases. Again, Nos. 16, 17, and 19 were subsequent to unusual fatigue. Widal and Javal[12] have described a floating balance of from 1 to 3 pounds of water, which many normal subjects lose with a small dechlorination. Ambard[13] found in his own case that there was a loss of 15 grammes of chlorides with 1500 grammes of water before he attained chloride equilibrium. When these facts are taken into consideration, together with the inevitable small errors, it is practically certain that there was no considerable retention of chlorides similar to that recorded in the observations of my first paper. The object of leaving off the earthy salts and replacing them with the vegetable salts was to see whether the original condition could be reproduced. The preponderance of magnesium over calcium phosphate was maintained till the end of October, so that magnesium must have been stored in the tissues and slowly given up. Metabolic states associated with a wastage of earthy salts have been frequently described; it has even been held that a preponderance of earthy over the alkaline phosphates characterises certain hysterical and neurasthenic states. At the beginning of November I had a very severe "nervous" breakdown that rendered it necessary for me to remain in bed for four months and from which I have not yet recovered. The prominent changes in the analyses before the illness were: (1) the specific gravity was lower at night during the unfavourable periods; (2) there was a marked increase in the urea though the proteid ration was not increased; (3) there was an increase in the ration and output of chlorides of from 14 to 20 grammes; (4) an increase in the urinary acidity from an equivalent of from 4·2 to 6·9 grammes of oxalic acid; (5) a fall during the third period in earthy phosphates; and (6) a fall in magnesium phosphate from 0·704 gramme in the first period to 0·474 in the third. There was a fall in blood pressure from 100 to 75 millimetres of mercury about 14 days before the breakdown. During October I noted on many occasions that after working continuously from 5 to 6 in the morning till 12 o'clock I felt unusually fatigued; on taking a gramme of calcium carbonate the sensation of fatigue disappeared in a short time, and about 300 cubic centimetres of

[9] Bouchard: Traité de Pathologie Générale, tome iii., 1st Part, p. 972.

[10] Leathes: Discussion on the Physiology of the Purin Bodies, Brit. Med. Jour., April 22nd, 1908, p. 495.

[11] Higgins: Loc. cit.

[12] Widal and Javal: La Cure de Déchloruration, p. 27.

[13] Ambard et Beaujard: Hypertention Arterielle et Retention Chlorurée, Société de Biologie, 20 Fev., 1904, p. 317. Labbé and Morchoisne (Le Metabolisme de l'Eau et des Chlorures, Revue de Médecine, April, 1905, p. 250) obtained confirmatory results, and concluded that the abrupt variations in weight recorded in normal persons are due to retentions and discharges of water and chlorides.

TABLE III.—*Case B. Chloride Balance.*

Nos. for reference to periods.	Dates 1908 and 1909.	Total chlorides eliminated.	Chloride of sodium added to food.	Estimated error.*	Retention of chlorides.	Dechlorination lost.	Concentration-volume chlorides. Day.	Concentration-volume chlorides. Night.	Balance.
	Period 1.								
1	Dec. 30th Jan. 8th	159	110	33	—	16·0	70	76	—
2	,, 9th ,, 18th	135·9	100	33	—	2·9	78	104	—
3	,, 19th ,, 30th	144·6	92	33	—	19·6	68	89	—
4	Feb. 9th ,, 18th	142·5	90	33	—	19·5	76	109	133·1 grms. eliminated.
5	,, 23rd March 3rd	159·4	105	33	—	21·4	86	100	—
6	,, 4th ,, 20th	164·1	128	33	—	3·1	76	99	—
7	,, 21st ,, 30th	164·6	122	33	—	9·6	85	109	—
8	April 2nd ,, 11th	154	120	33	—	1·00	80	88	—
9	,, 17th ,, 26th	158	107	33	—	18·00	70	81	—
10	,, 27th May 6th	135	90	33	—	12·0	65	85	—
	Period 2.								
11	,, 19th ,, 25th	125	100	23·1	—	1·9	63	71	—
12	,, 29th June 4th	127·9	79	23·1	—	24·7	60	81	61·2 grms. eliminated.
13	,, 11th ,, 20th	163·9	111	33	—	19·9	70	74	—
14	,, 21st ,, 29th	152·1	112	25·4	—	14·7	64	70	—
	Period 3.								
15	Aug. 1st ,, 10th	162·6	128	33	—	1·6	61	70	—
16	,, 11th ,, 20th	179·1	125	33	—	18·1	65	72	—
17	,, 24th ,, 30th	204·6	145	33	—	26·6	65	78	86·3 grms. eliminated.
18	,, 31st Sept. 9th	191·9	160	33	1·1	—	73	87	—
19	,, 10th ,, 18th	180	113·3	30·7	—	36·0	72	72	—
20	Oct. 13th ,, 21st	204	147·3	30·7	—	4·0	69	68	—

* See first paper (THE LANCET, April 18th, 1908) = Chlorides in food that were not estimated.

clear urine were excreted shortly afterwards. During the process of recovery my blood pressure has risen from 75 to 170 millimetres of mercury [14]; on omitting calcium the blood pressure has fallen to 115 millimetres of mercury. My weight rose from 10·5 to 16 stones in three months.

CASE C.—These analyses were made on two consecutive days in a case of a youth, aged 16 years, who was incapacitated in consequence of a low fatigue point. He had suffered for some five years from frequent attacks of asthma, influenza, and bronchitis; his blood pressure had fallen from 165 to 90 millimetres of mercury during the preceding year. This case was one of those obstinate cases of "nerves," constipation, &c., with a tendency to obesity.

The two cases that follow are examples of the effect of remineralisation in cases with a tendency to atony:—

CASE D.—A man, aged 59 years. Weight, 73 kilogrammes; height, 1·7 metres. He had suffered from neurasthenia, migraine, constipation, &c., for more than 25 years. During the previous year his blood pressure fell from 155 to 100 millimetres of mercury. The patient looked and felt extremely ill; he was pallid, restless, and irritable. The temperature was 96° F. and the blood pressure was 80. A complete examination of the blood was made by Dr. Spitta, who pronounced it to be normal. An interesting feature of this case was the association of headache and increased neurasthenic discomfort on the days when there was an increase in the urinary solids. The ration was approximately the same during the time the analyses were made.

This patient spent the winter in North Africa, carefully avoiding fatigue, exposure to cold, and constipation. I. prescribed phosphoric acid (maximum dose of 100 minims daily) to be taken before exercise and to relieve fatigue sensations, two grammes of calcium carbonate and magnesium oxide, iodine, and eggs. In April there was a remarkable change in his condition, the blood pressure was 100 and his temperature normal; the improvement has been maintained for 18 months.

CASE E.—A woman, aged 59 years, who had been more or less under medical treatment for neurasthenia, constipation, nervous dyspepsia, &c., for about 30 years. There was an extreme state of weakness from inanition, the pulse was feeble, and the blood pressure was 105. She had felt herself obliged to reduce her ration to inconceivably low limits; she stated that she had existed for some time on a few zwieback and one or two cups of tea. She explained her dilemma by the statement that "she was unable to eat because of the intense discomfort; at the same time, she fully realised that if she did not eat she must die." A ration was given of about 200 grammes of red beefsteak, about a gramme of magnesium oxide and calcium carbonate, with iodine and vegetable salts. Eggs and milk caused great discomfort; the former were given in small quantities till toleration was established. Complete rest was prescribed for three weeks; after this the patient gradually increased her exercise till she recovered a remarkable degree of health and activity. In this case, on one or two occasions, she had nothing but the vegetable salts for two or three days at a time; the partial starvation seemed to improve her condition and increase her appetite for days afterwards. The analyses were made during a period of over three months.

CASE F.—A man, aged 57 years. Weight, 76 kilogrammes. The patient had had a rest-cure for neurasthenia in the previous October, and subsequently he went to Egypt and the Riviera. In the month of April following he felt worse than before undertaking the rest-cure. With a similar treatment as that of Case D this patient recovered sufficiently to be able to resume his work. Oxybutyric and diacetic acids were present in the urine as well as a trace of glucose.

CASE G.—The patient, aged 24 years, was the daughter of an American physician. There was a history of ill-defined illnesses, neurasthenia, and nervous dyspepsia for six years. She had been in the clinics of stomach specialists in the United States, Germany, and Switzerland.

CASE H.—This patient had recently had a rest-cure in London for neurasthenia. The patient was in a highly irritable and nervous state while the analyses were made.

The Condition of the Colon.

The following cases (A to G) correspond with those described above.

CASE A.—The abdominal wall was soft and bulged below the umbilicus. The colon was full from the cæcum to the sigmoid flexure; massage only induced a temporary contraction of the transverse fibres; there was no spasm. It was not till after injecting seven ounces of olive oil for three nights that the colon could be emptied by massage. After fitting this case with a Glénard's belt, it was found that the muscles recovered their tone in two or three weeks without exercises. No difficulty was found in keeping the colon empty with oil enemata.

CASE B.—During the second week in June, 1908, a considerable collection of intestinal sand caused constipation; it was removed in three or four days with oil enemata. The sand consisted of two parts of calcium and one of magnesium salts. During August and September recurring bouts of obstinate constipation were experienced, with membranous colitis and spasm of the transverse and descending colons. After the fatigue of a journey to England painful contractions of the colon were constantly present, and there was no action without oil enemata. The effect of the oil was remarkably complete and rapid; for instance, if an oil enema was given at 8 A.M., and some charcoal after breakfast at 8.30, the bowels would be open three or four times, and the charcoal would appear in the fæces before 12 A.M. After inspissated ox-gall was administered by the mouth oil

[14] Dr. J. N. F. Fergusson of Malvern, who made the observation for me, had some doubts as to the accuracy of the instrument used.

TABLE IV.—*Case B. Urinary Analysis.*

TABLE IV.—*Case B. Urinary Analysis.*

Number.	Dates.	Volume, D. and N.*	Total volume.	Specific gravity.	Total solids.	Solids, D. and N.	Chlorides, D. and N.	Total chlorides.	Urea, D. and N.	Total urea.	Ammonia, D. and N.	Total ammonia.	Uric acid, D. and N.	Total uric acid.	P_2O_5, D. and N.	Total P_2O_5.	Earthy phosphates, D. and N.	Total earthy phosphates.	Magnesium phosphate, D. and N.	Total magnesium phosphate.	Calcium phosphate, D. and N.	Total calcium phosphate.	Calcium ppt. by NH_3.	Calcium NH_3 filtrate, D. and N.	Total calcium in NH_3 filtrate.	Acidity in c.c.ms. of oxalic acid, D. and N.	Total acidity.
1	Sept. 10th	592	1093	1025	62·5	33·8	7·63	12·69	11·9	22·8	—	—	409	·710	1·66	3·33	·328	·73	·21	·362	·118	·358	—	—	—	2·02	4·02
	Oct. 9th	501	1026	1026		28·7	5·06		10·9				·301		1·67		·402		·162		·24					2·0	
	Nov. 4th	704	1069	1025	72·0	40·4	11·7	19·22	12·3	22·6	—	—	·383	·746	1·78	3·18	·426	·823	·209	·34	·217	·483	—	—	—	1·87	3·69
	,, 13th	355		1028		31·6	7·52		10·3				·363		1·4		·397		·131		·266					1·72	
2	,, 14th	562	1044	1026	72·1	42·4	12·3	19·4	12·8	22·2	—	—	·557	·923	2·0	3·5	·526	·83	·236	·389	·29	·441	—	—	—	2·19	3·59
	,, 19th	482		1028		29·7	7·1		9·4				·366		1·5		·304		·153		·151					1·4	
3	,, 28th	707	1277	1027	77·7	44·2	12·47	19·5	15·1	27·8	—	—	·527	·923	1·88	3·5	·458	·824	·271	·466	·187	·358	—	—	—	2·26	4·11
	Dec. 8th	570		1047		33·5	7·03		12·7				·396		1·62		·366		·195		·171					1·85	
4	,, 9th	762	1259	1027	76·2	45·1	12·16	18·55	15·5	26·7	—	—	·567	·916	1·98	3·7	·544	·961	·33	·54	·214	·421	—	—	—	2·25	4·16
	,, 18th	507		1028		31·1	6·39		11·2				·349		1·72		·417		·21		·207					1·91	
5	,, 19th	784	1278	1026	74·2	46·9	12·2	17·8	12·6	21·3	·682	1·143	·602	·939	1·74	2·99	·556	·936	·383	·593	·173	·345	—	—	—	1·54	3·03
	,, 29th	494		1027		27·3	5·6		8·7		·461		·337		1·25		·382		·21		·172					1·49	
6	,, 30th	716	1182	1028	75·0	44·6	10·15	15·9	12·2	21·1	·766	1·2	·52	·844	2·04	3·63	·63	1·119	·418	·736	·212	·383	—	—	—	2·15	4·05
	Jan. 8th	466		1029		30·4	5·75		8·9		·544		·324		1·59		·489		·318		·171					1·9	
7	,, 9th	755	1224	1028	73·3	46·2	9·35	13·59	12·9	21·7	·736	1·232	·641	·969	1·96	3·37	·564	·912	·372	·564	·182	·348	—	—	—	1·71	3·24
	,, 18th	469		1027		27·1	4·24		8·8		·496		·328		1·41		·358		·192		·166					1·53	
8	,, 19th	711	1103	1029	72·0	47·2	10·22	14·46	13·2	21·4	·72	1·073	·537	·857	2·17	3·46	·551	·957	·356	·592	·195	·355	—	—	—	2·06	3·61
	,, 30th	392		1029		24·8	4·24		8·2		·353		·32		1·29		·406		·236		·16					1·55	
9	Feb. 9th	776	1271	1026	68·8	46·1	8·73	13·23	11·9	20·2	·667	1·21	·584	·903	1·89	3·2	·498	·913	·402	·742	·096	·174	—	—	—	1·7	3·11
	,, 18th	495		1025		24·1	4·5		8·3		·543		·419		1·31		·415		·34		·078					1·41	
10	,, 23rd	989	1503	1023	74·4	46·3	10·7	15·94	14·0	22·1	·755	1·182	·497	·791	2·16	3·54	·61	1·022	·448	·767	·162	·255	—	—	—	1·61	2·66
	March 3rd	514		1025		28·1	5·24		8·1		·427		·294		1·38		·412		·319		·093					1·25	
11	,, 11th	902	1457	1026	75·3	47·3	10·86	16·41	13·4	22·3	·717	1·129	·586	·971	2·04	3·23	·504	·875	·363	·645	·141	·23	—	—	—	1·66	3·11
	,, 20th	555		1025		28·0	5·55		8·9		·412		·385		1·24		·371		·282		·0·9					1·45	
12	,, 21st	886	1517	1023	78·0	44·9	10·54	16·46	13·2	23·8	·793	1·352	·555	·928	2·05	3·39	·579	1·121	·435	·785	·131	·215	·254	·372	·626	1·63	4·13
	,, 30th	631		1024		33·1	5·92		10·6		·559		·373		1·34		·542		·35		·094		·115			1·45	
13	April 2nd	817	1316	1025	73·2	44·1	9·91	15·4	12·6	21·7	·66	1·095	·505	·847	2·08	3·53	·556	1·039	·437	·79	·131	·269	·128	·305	·433	2·04	4·05
	,, 11th	499		1026		29·1	5·49		9·1		·435		·342		1·45		·473		·353		·138		·091			2·01	
14	,, 17th	771	1232	1026	74·3	45·0	10·67	15·83	12·4	21·0	·743	1·205	·361	·664	1·77	3·12	·523	·921	·382	·632	·15	·297	·142	·348	·490	2·51	5·00
	,, 26th	461		1028		29·3	5·16		8·6		·462		·303		1·35		·398		·25		·147		·1			2·49	
15	,, 27th	652	1058	1030	72·8	44·1	8·72	13·59	12·8	21·4	·52	·81	·627	·991	1·88	3·36	·57	1·02	·339	·567	·231	·453	·183	·308	·491	2·71	5·05
	May 6th	406		1031		28·5	4·87		8·6		·29		·364		1·43		·45		·223		·222		·142			2·35	
16	,, 19th	690	1190	1027	75·7	44·3	10·8	17·82	12·4	22·2	·734	1·315	·632	1·042	1·67	3·14	·531	1·004	·4	·695	·139	·199	·168	·463	·631	2·34	4·54
	,, 25th	500		1029		31·4	7·02		9·8		·581		·41		1·47		·473		·296		·16		·101			2·2	
17	,, 29th	720	1234	1027	72·1	43·9	11·8	18·29	11·4	21·6	·669	1·13	·571	·934	1·79	3·28	·588	1·043	·39	·694	·167	·328	·24	·412	·436	2·5	4·81
	June 4th	514		1024		28·2	6·49		10·2		·461		·365		1·49		·455		·304		·181		·113			2·31	
18	,, 11th	783	1289	1024	65·8	38·5	10·5	16·39	14·1	25·0	·734	1·254	·531	·827	1·79	3·39	·571	·995	·42	·721	·175	·207	·193	·318	·511	2·96	5·54
	,, 20th	506		1024		27·3	5·89		10·9		·52		·296		1·6		·424		·301		·121		·153			2·59	
19	,, 21st	800	1410	1025	75·7	43·7	10·15	17·75	14·7	27·5	·798	1·558	·546	·941	1·78	3·47	·605	1·079	·392	·71	·209	·356	·232	·844	·418	2·55	4·95
	,, 29th	610		1021		32·0	7·6		12·8		·76		·395		1·69		·464		·318		·147		·171			2·4	
20	August 1st	565	1143	1029	68·1	35·9	8·88	16·26	10·9	21·0	—	—	·494	·916	1·42	2·92	·415	·76	·21	·38	·219	·4	·219	·397	·616	2·61	4·94
	,, 10th	578		1030		32·2	7·38		10·1				·422		1·5		·345		·17		·181		·21			2·33	
21	,, 11th	651	1196	1030	79·8	45·8	9·62	17·91	16·4	30·3	·465	·582	·538	·93	1·77	2·93	·465	·843	·282	·621	·182	·33	·187	·342	·529	2·33	4·21
	,, 20th	545		1028		34·0	8·29		13·9		·238		·392		1·15		·378		·239		·148		·203			1·88	
22	,, 21st	778	1528	1028	79·8	50·1	11·47	20·46	15·8	29·7	·517	·589	·548	·93	2·04	3·61	·467	·908	·356	·638	·18	·359	·134	·481	·615	2·5	4·13
	,, 30th	750		1023		37·4	8·99		13·9		·272		·382		1·57		·421		·282		·179		·152			1·63	
23	,, 31st	748	1415	1025	70·0	40·6	11·13	19·18	16·2	30·8	·214	·494	·544	·965	1·71	3·08	·39	718	·209	·389	·18	·328	·126	·385	·511	2·33	4·14
	Sept. 9th	667		1020		29·4	8·05		14·6		·28		·421		1·37		·328		·180		·148		·123			1·81	
24	,, 10th	847	1436	1027	85·6	50·7	11·74	19·89	19·5	37·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2·64	4·17
	,, 18th	589		1027		34·9	8·15		18·1																	1·53	
25	Oct. 11th	717	1325	1027	70·9	37·6	10·33	19·22	15·0	29·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·09	6·08
	,, 21st	608		1025		33·3	8·89		14·0																	2·89	

* D. and N. = Day and Night.

TABLE V.—*Urinary Analyses of Cases C, D, E, F, G, and H.*

Case.	Volume, D. and N.*	Total volume.	Specific gravity, D. and N.	Solids, D. and N.	Total solids.	Chlorides, D. and N.	Total chlorides.	Urea, D. and N.	Total urea.	Ammonia, D. and N.	Total ammonia.	Uric acid, D. and N.	Total uric acid.	P_2O_5, D. and N.	Total P_2O_5.	Earthy phosphates, D. and N.	Total earthy phosphates.	Magnesium phosphate, D. and N.	Total magnesium phosphate.	Calcium phosphate, D. and N.	Total calcium phosphate.	Calcium ppt. by NH.	Calcium in NH_3 filtrate, D. and N.	Total calcium in filtrate.	Acidity in grms. of oxalic acid, D and N.	Total acidity.
C.	270 250	520	1028 1029	18·7 17·5	36·2	4·42 3·34	7·76	5·9 5·6	11·5	·238 ·27	·508	·36 ·373	·733	1·98 1·27	3·25	·229 ·218	·447	·148 ·05	·198	·081 ·148	·229	·267	·303 ·14	·443	1·43 2·5	3·93
	430 230	660	1028 1029	28·9 16·6	45·5	8·84 4·5	13·34	8·1 4·7	12·8	·479 ·234	·713	·495 ·332	·827	1·16 0 97	2·13	·225 ·126	·351	·168 ·057	·225	·057 ·169	·226	·223	·2 ·115	·315	1·2 1·24	2·44
D.	650 530	1180	1018 1020	24·1 22·0	46·1	3·9 3·18	7·08	3·4 2·3	5·7	—	—	·313 ·249	·562	1·23 1·06	2·29	·371 ·325	·696	·065 ·16	·225	·306 ·265	·571	—	—	—	1·04 1·27	2·31
	680 710	1390	1020 1017	28·2 24·8	53·0	8·43 2 69	11·12	13·2 10·6	23·8	—	—	·371 ·327	·698	1·76 1·27	3·03	·306 ·39	·696	·085 ·071	·156	·221 ·319	·54	—	—	—	2·17 1·27	3·44
	500 650	1150	1027 1016	30·7 21·4	52·1	4·2 3·12	7·32	10·2 10·9	21·1	—	—	·431 ·276	·707	1·4 1·13	2·57	·525 ·292	·817	·2 ·097	·297	·325 ·195	·52	—	—	—	2·3 1·82	4·12
	740 1180	1920	1020 1010	32·6 23·6	56·2	6·21 4·95	11·16	15·5 20·3	35·8	—	—	·432 ·236	·668	2·11 2·11	4·22	·407 ·472	·879	·092 ·177	·269	·314 ·295	·609	—	—	—	2·3 1·06	3·36
	920 630	1550	1015 1025	28·3 19·4	47·7	4·78 4·53	9·31	21·2 13·6	34·8	—	—	·394 ·328	·722	1·3 1·07	2·37	·368 ·283	·651	·092 ·063	·155	·276 ·22	·496	—	—	—	1·74 1·13	2·87
	1150 700	1850	1015 1020	35·3 29·0	64·3	4·6 5·74	10·34	6·2 14·9	21·1	—	—	·485 ·332	·817	2·07 1 13	3·2	·46 ·49	·95	·115 ·07	·185	·345 ·42	·765	—	—	—	1·72 1·26	2·98
	1040 830	1870	1015 1014	32·0 23·8	55·8	13·1 3·81	16·91	11·5 15·8	27·3	—	—	·422 ·256	·678	3·95 1·49	5·44	·624 ·332	·956	·156 ·124	·28	·468 ·208	·676	—	—	—	1·87 1·32	3·19
E.	350 200	550	1022 1027	16·4 12·3	28·7	4·62 3·04	7·66	6·43 5·06	11·49	·166 ·17	·336	·272 ·142	·414	·49 ·93	1·42	·116 ·082	·198	·024 ·115	·039	·092 ·067	·159	·217	—	·136	0·84 0·28	1·12
	310 200	510	1020 1028	12·8 12·9	25·7	3·75 1·24	4·99	9·8 5·12	14·9	—	—	·14 ·191	·331	·4 ·89	1·29	·1 ·22	·32	·03 ·06	·09	·07 ·16	·23	—	·306 ·057	·363	1·3 0 93	2·23
	360 500	860	1020 1015	14·9 15·4	30·3	3·24 3·9	7·14	7·4 8·5	15·9	—	—	·205 ·303	·508	0·63 0·87	1·5	·126 ·325	·451	·188 ·224	·412	— ·101	—	·192	042 278	·28	— ·05	0·5
	700 630	1330	1017 1014	24·5 18·8	43·3	7·7 5·16	12·86	11·9 10·7	22·6	—	—	·295 ·281	·576	0·98 0·79	1·77	·413 ·324	·737	·136 ·157	·293	·277 ·167	·444	—	—	—	1·58 0·71	2·29
	560 580	1140	1015 1017	17·2 20·3	37·5	4·76 5·8	10·56	9·46 9·55	19·0	—	—	·242 ·251	·493	0·56 0 53	1·09	·313 ·327	·64	·201 ·153	·354	·112 ·194	·306	—	·219 ·17	·389	1·2 0·26	1·46
	730 630	1360	1023 1020	36·2 26·2	62·4	7·4 6·42	13·82	10·7 12·6	23·3	·868 ·578	1·446	·519 ·607	1·126	1·6 1·28	2·88	·401 ·299	·7	·189 ·198	·387	·212 ·102	·314	·576	·153 ·089	·242	3·35 2·89	6·24
F.	770 650	1420	1020 1018	31·0 24·1	55·1	6·31 5·46	11·77	10·8 8·7	19·5	·44 ·142	·582	·324 ·338	·662	1·25 0·97	2·22	·431 ·352	·783	·25 ·149	·399	·181 ·203	·384	·203	·052 ·145	·197	2·1 2·1	4·11
G.	420 410	830	1024 1020	22·0 17·0	39·0	4·7 4·18	8·88	8·4 7·3	15·7	·612 ·569	1·181	·143 ·196	·339	1·92 1·22	3·14	·235 ·188	·423	·134 ·102	·236	·101 ·086	·187	·087	·341 ·235	·596	1·81 1·64	3·45
H.	500 480	980	1026 1026	29·3 28·1	57·4	7·4 6·72	14·12	12·0 10 3	22·3	1 224 1·09	2·314	·358 ·474	·832	1·3 1·16	2·46	·42 ·316	·736	·227 ·189	·416	·193 ·127	·32	·52	·053 ·113	·166	2·04 1·34	3·38
	670 480	1150	1024 1025	35·3 27·2	62·5	7·1 6·72	13·82	14·3 13·2	27·5	·82 ·531	1·351	·58 ·372	·952	1·63 1·15	2·78	·536 ·504	1·04	·234 ·252	·486	·302 ·152	·454	·578	·131 ·094	·225	2·01 3 07	5·08

* D. and N. = Day and Night.

was retained all night in a normal manner without causing diarrhœa. No mucus had been found in the fæces from November till March when ox-gall was administered; in the course of a week a quantity of grape-skin membranes and mucus were discharged. The mucus, &c., was measured daily by washing the fæces through a sieve; a progressive diminution was found in the course of from six to eight weeks with a great improvement in health.

Roger [15] demonstrated that bile exercises a solvent action on the colic mucus which has the effect of preventing the adhesion of coagulated mucus that occurs in membranous colitis. He was able to produce adherent and coagulated mucus in animals by irritating the bowel and diverting the current of bile. Hence the alleged successful treatment of membranous colitis by administering ox-gall by rectal injection and by the mouth. The former device may cause considerable pain and irritation; it is said, however, to be more efficacious than the latter.

CASE E.—The conspicuous feature of this case was the extreme degree of atony both of the abdominal muscles and the colon. The bowels had not been opened without aperients for 25 years. By using a quilted shot-bag so as to cause an even distribution of weight over the abdomen while the patient was awake and afterwards providing her with a Glénard's belt I was astonished to find that the abdominal muscles recovered their tone and finally that the colon contracted when it was massaged. No difficulty was found in obtaining a daily action of the bowels with small oil enemata administered at night.

CASE G.—There were enteroptosis, slight gastroptosis, a contracted transverse and descending colon, constipation, and a fæcal tumour of the size of a large orange in the splenic angle of the colon which had been notified by a physician during the previous year. Appropriate treatment combined with wearing a belt resulted in an extraordinary improvement in this case. Her mother wrote that her condition had been thought to be hopeless. I append notes here of some interesting cases.

CASE 1.—A man, aged 26 years, who had been treated for some six or seven years for neurasthenia, constipation, &c. The patient was emaciated, with bent shoulders and a sallow, unhealthy complexion. Crepitation and obscure resistance were found over the splenic angle of the colon. The descending colon was contracted to the size of a lead pencil. A Glénard's belt removed the stooping and increased the strength of the abdominal muscles. I saw this patient later, after clearing out a quantity of retained fæces with oil enemata; there was a sharp attack of localised peritonitis over the splenic angle of the colon. Two days later there was a hardness felt under the inner third of Poupart's ligament. On the following day there was a marked improvement that was associated with a disappearance of the swelling under Poupart's ligament. There was a history of a serious illness while the patient was at school caused by a lumbar abscess presenting in the groin. I feel convinced that there was an old sinus connected with the colon in this case.

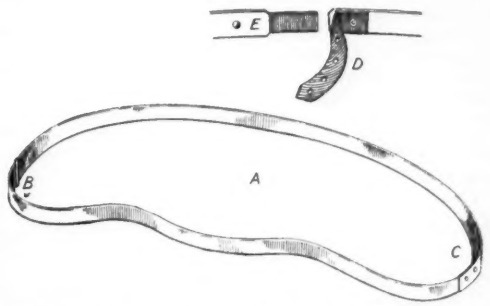
CASE 2.—A woman, aged 33 years, with a history of neurasthenia, a low fatigue point, headaches, and frequent illnesses for some ten years. The bowels acted irregularly. There was a spasm of the descending colon with an extreme condition of gastroptosis, the stomach falling below the umbilicus; it could be easily replaced by firm pressure over the pubes. Glénard's belt was ineffective in this case; the patient devised a rigid iron support worn over a low corset that was perfectly satisfactory (see Fig. 1). There was a great improvement in health, the chest expanded 3 or 4 inches, and the characteristic stooping was removed. One of the advantages of the rigid support was that it did not exercise any pressure over the hips.

CASE 3.—A man, aged 36 years, had been vaguely ill with neurasthenia, &c., for more than ten years; he had had a bad breakdown two years previously and had not had a natural opening of the bowels for four or five years. He was in the habit of taking cascara every four days. There was contraction of the transverse and descending colons, the cæcum and ascending colon being empty. It was clear, after using oil enemata and charcoal, that fæces collected in the splenic angle of the colon.

[15] An account of this work with records of cases is found in Pathogénie et Traitement de la Colite Muco-membraneuse by Nepper-Maloine, Paris, 1906.

CASE 4.—A woman, aged 35 years, had complained of vague disorders, tiredness, headaches, indigestion, &c., for some years, for which she had not been able to obtain relief. The bowels were said to be regular. On giving charcoal the fæces were found to be black for five days, though nothing but the usual contraction could be felt; oil enemata cleared

FIG. 1.



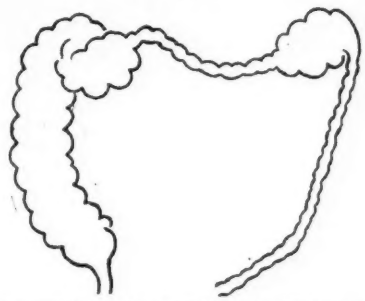
Rigid steel band worn over a low corset or belt for gastroptosis. A, Convexity to be varied with the needs of the individual. B, Hinge. C, Fastening, that is shown above. E, Tongue of metal which fits into a groove behind D, a strap. (Made by Montague, Bond-street, London, W.)

out a quantity of fæces, and in the course of a week it was found that the charcoal passed through normally in 24 hours.

Glénard first described these conditions [16] (see Fig. 2). If his experience of 25 years could be summed up in a few words it would be that if these patients are properly fed, provided with a belt, and purged, they will recover.

Under normal conditions the space between the abdominal wall and the lumbar curve is insignificant; the elastic muscles, aided by the great omentum, amply suffice to maintain the viscera well above the ledge provided by the lumbar

FIG. 2.



Chronic spasm of the colon (after Glénard). Showing the contracted transverse and descending colons and the splenic pouch referred to in the text.

curve. So soon, however, as the muscles weaken there is traction on the diaphragm which can only be relieved by flexion of the trunk. Riva-Rocci has shown that even slight irritation of the diaphragm alone is sufficient to cause the most uncomfortable neurasthenic sensations. The relief of these sensations by flexion increases the visceroptosis by depriving the viscera of the support of the lumbar curve, thus throwing still more weight on the abdominal muscles. A most striking demonstration of the unsuspected force exercised by the weight of the viscera can be obtained by standing behind a patient and attempting to replace them by pressure with both hands immediately above the pubes. This experiment suffices to make one realise the absolute necessity for mechanical support.

The belt secures (1) pressure over the pubes which maintains the viscera above the lumbar curve, relieves the strain on the back muscles and the mechanical interference with respiration, both resulting from moving the centre of gravity forwards in stooping to relieve the traction on the diaphragm; (2) the low blood pressure from splanchnic stasis is relieved

[16] An admirable account of these conditions is to be found in the works of Monteuis—"Les Deséquilibres du Ventre et Abdominales Méconnues," Baillière et Fils, Paris.

by its pressure; (3) the muscles recover their tone when relieved from the overwhelming weight of the viscera; and (4) the traction on the hepatic and splenic attachments of the colon is relieved. This traction often causes most persistent pain and inconvenience.

It is important to bear in mind the value of saline purgatives in these cases; Glénard states that he has seen nothing but good effects by their use "for indefinite periods." Provided that one or two satisfactory evacuations are obtained in the morning there can be no question that salines are of the greatest value in these conditions. The effects produced cannot be accounted for by their purgative action alone; in my own case there was a most striking and decided improvement in the sensations of fatigue, &c.

I have no hesitation in attributing these conditions to the effects of the cumulative action of the toxins produced by cold, fatigue, and auto-intoxication. The conspicuous analytical features are: (1) diminished velocity of the traffic of the urinary ingredients shown by the $\frac{\text{day}}{\text{night}}$ quotient; (2) urea and other constituents are insufficient, that is to say, they do not correspond to the ration; (3) there may be evidence of chlorine storage; and (4) there are variations, (*a*) in the proportions of Mg and Ca phosphates, and (*b*) the earthy and alkaline phosphates. The underlying idea is that the attacks of the toxins on the protoplasm are permanently expressed *inter alia* by intracellular deficiencies in phosphorus and the earthy salts. The faulty function of this deficient protoplasm is most evident in the low fatigue point and a tendency to produce fatty acids. If it is true that a low loss of weight per hour at night indicates a formation of glycogen from fat, and further that this result can be determined by administering calcium, this measurement will form a valuable indicator of a type of cellular activity or of a "state of matter." Obesity from this point of view would be the result of a diminished power of transforming fat into glycogen during the resting hours associated with an excessive carbon ration. This excessive ration with fat storage occurs in hybernating animals in the autumn, while toxæmia from cold is increasing. If one of the differences between the end of a day's work and the beginning is that more glycogen is available for muscular work after the resting hours, there would be a plausible explanation of the dietetic habits of the populations that are accustomed to do several hours' work with a very small breakfast. Whatever explanation is adopted, the fact remains that cases such as I have described are undoubtedly better when their starch ration is limited to the amount they can poltophagise. Treatment consists in the presentation of the deficient protoplasmic elements as a daily ration while the patient is placed under as perfect conditions as possible. It is essential to realise that it is necessary for the patient to have a balance of energy available for repair at the end of the day. Mental or physical work carried up to, or worst still beyond, the fatigue point, exposure to cold, the ingestion of insufficient or unsuitable food, a sufficient degree of intestinal auto-intoxication, would either of them suffice to postpone recovery indefinitely, at the same time perpetuating or aggravating their analytical peculiarities.

When it is remembered what striking effects are produced on the type of cellular activity by the modification of the concentration of saline solutions one asks oneself whether spontaneous dechlorinations such as I have described in my first paper would not suffice to produce the nuclear anarchy of malignant disease when local conditions are favourable.

Cases such as I have described must be very common—they all occurred in the course of a year in a small general practice.

The breakdown in my own case was clearly the result of overwork and anxiety during and after the re-mineralising process. I should like to be able to prove that it was mainly due to interference with the $\frac{\text{CaMg}}{\text{NaK}}$ balance first by having an increased ration of Ca and Mg for six months and afterwards the large ration of vegetable salts for the four months immediately preceding the illness. The policy of concentrating treatment and attention on the mental symptoms in these cases produces a condition of either futile exasperation or despair—states of mind which are equally prejudicial to recovery. I am convinced that it is essential that these patients should be made to understand that they are not suffering from "nerves" but from a serious condition of vicious metabolism that demands their intelligent coöperation for a long period of time, and that unless this is done they will not recover. I have seen cases where relations, friends and medical attendants appear to combine to produce conditions that render recovery absolutely impossible.

The question whether or not the absence of sufficient exogenous uric acid in the urine shows that it is being retained in the body has some light thrown on it in these conditions. In Case A, when there was an intake of 200 grammes of cooked meat (No. 1), there were only 14 grammes of urea and 0·53 gramme of uric acid, whereas in No. 14, with 180 grammes, there were respectively 18 and 0·65 gramme.

In Case B a striking association is noticed in the increased velocity of the traffic of uric acid and increased proportion of magnesium over calcium phosphate in the urine. I had the advantage of a consultation in Vienna with Professor von Noorden about a case that presented analytical peculiarities similar to my own. Uric acid retention was diagnosed and treated in the usual way. This patient had come over at the end of January from Cape Colony—that is to say, from midsummer to midwinter. During the time that the analyses were being made he was taking long fatiguing walks of over three hours in bitterly cold weather. I am unable to say whether this proceeding favours uric acid retention, but there can be no question that in such a case it diminishes the velocity of the traffic of the urinary solids.

To recapitulate, the first step in the diagnosis of these cases is to find whether or not there is coprostasis by using charcoal tablets (six morning and evening), whether there is mucous colitis present by means of ox-gall for at least a week, carefully examining the colon and fæces, and, finally, supplying a belt when necessary. The next step is to give a weighed ration and make analyses for at least four days. To repeat the analyses for a similar period with the same ration combined with the re-mineralising process.

The most important application of these principles is in the correction of metabolic errors at their inception. I well remember when consulting Dr. Haig some 12 years ago that, in addition to my "gouty" symptoms, I had noticed that I was passing more urine during the night than in the day time. I was unfortunate enough to treat this condition for some years by means of phosphorus starvation and excessive exercise. Harmful as I am convinced that Haig's diet wrongly applied may be, it is, comparatively speaking, harmless when it is compared to the careless application of the principle of Chittenden's economical nutrition. Two points require explanation and attention in Chittenden's experiments: first, that the nitrogen ration varied between 0·09 gramme per kilogramme in his own case and 0·17 gramme per kilogramme in the case of W. L. Anderson. The second point is the enormous percentage of catastrophes that resulted from his experiments: (1) physically unfit at the end of 20 days of economical nutrition; (2) cardiac irritability in 47 days; (3) acute tuberculosis in 26 days; and (4) acute melancholia in 106 days. I know that physiologists tell us that they have nothing to do with pathological conditions, yet the fact that these conditions arose in a body of men who are above the average when compared with a similar number in the civil population necessitates further explanation before these principles are proposed for extensive application. The art of adaptation necessarily deals with all the factors of environment; the ration therefore requires to be adjusted skilfully and scientifically not only to climate and work, but to the "state of matter" of the individual.

It is undeniable that diets such as those of Haig and Chittenden have their uses under suitable circumstances, but unless these conditions are defined they are often used for unsuitable cases. Prolonged personal experience has convinced me that it is possible to inflict irreparable damage to the tissues by persisting in the use of either unsuitable or inadequate dietaries. Above all, it is necessary to remember that their evil effects may take years to declare themselves, without providing any recognisable subjective indications during the process.

Bio-technics, or the art of adjusting individuals with their environment, consists in those modifications of the ration, of work, rest, climate, &c., necessary to attain and maintain the optimum chemical and physical equilibrium. There would appear to be a danger of forgetting that this art, which has

been practised empirically with varying success since the time of Hippocrates, even exists. The recent revolution, however, in our conceptions of the dynamics of living matter, combined with the numerical records of the physical changes associated with the successful practice of our art, cannot fail to provide us with the impetus necessary to attain scientific control of life through the harmonious adjustment of living tissues to their environment.

Pallanza, Italy.

THE INFANTILE TYPES OF THE TEMPORAL BONE AND THEIR SURGICAL IMPORTANCE.

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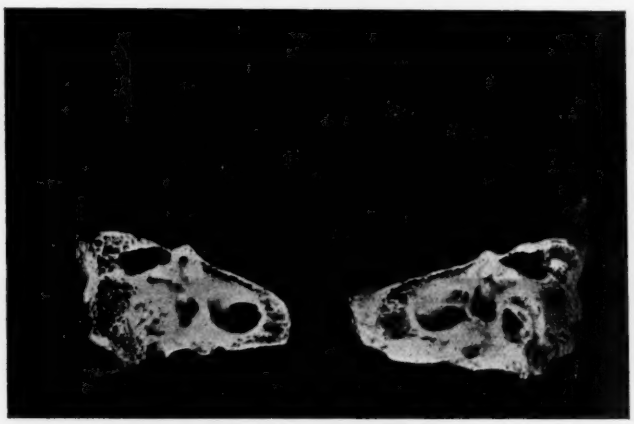
The Infantile Types.

I APPLY the term "infantile" to those bones which retain throughout life the characteristics of the outer antral wall and mastoid mass as seen in infancy. (Fig. 1.) On making a lateral vertical section through the antrum and mastoid mass in infancy it will be seen that the outer wall of the antrum is composed of two layers—a thin outer layer of compact bone, and an inner layer of fine cells. These cells are formed before birth; therefore I call them the "fœtal cells" to distinguish them from any which may form in later life, and from which they can be differentiated always by their fineness and inward direction. The mastoid mass is, as a rule, *diploëtic*, but it may be formed of *dense* bone. If the mass is diploëtic, a thin layer of compact bone, which can be easily demonstrated by scraping away the diploë, separates it from the antral cavity. There are, therefore, two types in infancy: (1) one in which the mastoid mass is diploëtic; and (2) one in which the mastoid mass is dense. Each type may persist all through life, but of course on an exaggerated scale.

FIG. 1.



Right temporal bone of an infant.

1. *The diploëtic form in the adult.*—In this type the thin outer compact layer of the outer antral wall has increased in thickness from the periosteal side and is of extreme density; the inner layer of "fœtal cells" is still seen; the mastoid mass is entirely diploëtic, and the separating layer between the diploë and the cavity of the antrum is much increased in thickness. (Fig. 2.) Whenever the mastoid process is entirely diploëtic the outer aural wall is always formed of dense bone. This type is seen in about 20 per cent. of all bones, and it can be seen at all ages; it is as common in females as in males, and I think it is always symmetrical, but on this point I wish to make further investigations.

2. *The dense form in the adult.*—In this type the dense mastoid mass persists all through life, but the condition of the outer antral wall remains the same as in the diploëtic type, the outer layer being very much increased in thickness and of extreme density, while the inner layer of "fœtal cells" is still seen. (Fig. 3.) This form is only seen in about 1 or 2 per cent. of all bones.

Both types are remarkable in the absence or scarcity of cells in other parts of the bone than the mastoid region. There is no external sign to show when these types are present, and the statement made by Kanasugi in his book "Contributions to the Topographical Surgical Anatomy of the Mastoid Region" that "in general small short processes are diploëtic and large ones pneumatic" cannot be relied on. The outer antral wall is often of great thickness as well as density in these infantile types. The greatest depth of the antrum from the surface is seen in them: it may measure three-quarters of an inch (19 mm.). A forward lateral sinus is usual and is found much more frequently and to a much greater extent than in the cellular types. The sinus often comes well forward below the level of the antrum and may reach the posterior meatal wall, or it may even dip in between the cavity of the antrum and the surface. The antrum may be large or small; if large, the posterior wall may be of extreme thinness and translucency, and may have the cerebellum or lateral sinus, or both, lying against it. In some specimens the posterior antral wall is pushed in by the cerebellum, thus narrowing the antral cavity from before backwards.

As in all types the antrum may be highly placed, or the middle fossa may dip down either between the antral cavity and the surface, or external to the superior semicircular canal, causing a low flat antrum. In one bone the descending part of the facial nerve curves inwards before emerging at the stylo-mastoid foramen.

I wish to say that a dense outer antral wall does not always mean that cells are not present in the mastoid. For the outer antral wall may retain this infantile form and a few cells may be present along the squamo-mastoid suture, thus closely resembling the pure infantile type; or cells may be well formed in the upper part of the mastoid or throughout the process; or a narrow track may pass through the upper mastoid to large cells in the lower or projecting part of the process. A rare condition is for a dense outer antral wall to be associated with a narrow tortuous tract of cells with very dense walls running through the mastoid. I may also say that if cells, apart from the "fœtal cell," are present in the outer antral wall they are also present to a greater or less degree in the mastoid.

Surgical Importance.

The surgical importance is the same in both forms and may be considered under two heads: (1) Influence in cases of suppuration in the antrum; and (2) influence on operations for suppuration in the antrum and its sequelæ.

1. *Influence on suppuration.*—It is obvious that an acute suppuration in the antrum may exist without any signs behind the ear, as it is impossible for pus to penetrate the outer antral wall or reach the mastoid process, and that there is a great liability for further serious extension, especially to the posterior fossa if the posterior antral wall is very thin.

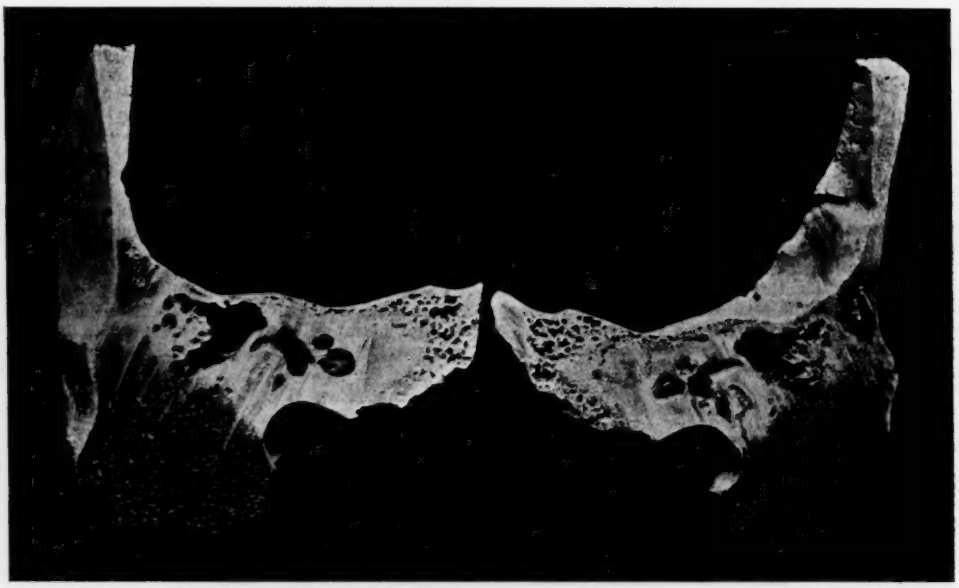
If intracranial or labyrinthine infection does not occur in acute suppuration there is a great chance of the suppuration becoming chronic; the lining membrane of the antrum undergoes destruction and degeneration, or some local destruction of part of the bony walls or ossicles takes place and causes a chronic discharge from the middle ear tract.

The importance of the "fœtal cells" lining the outer antral wall in connexion with suppuration has never received sufficient attention, due probably to the fact that they are removed during operation without being examined carefully. They must certainly cause deficient drainage and be liable to caries; partial destruction of them can be seen in some bones in which chronic suppuration has occurred.

There is no doubt that the infantile types are found most

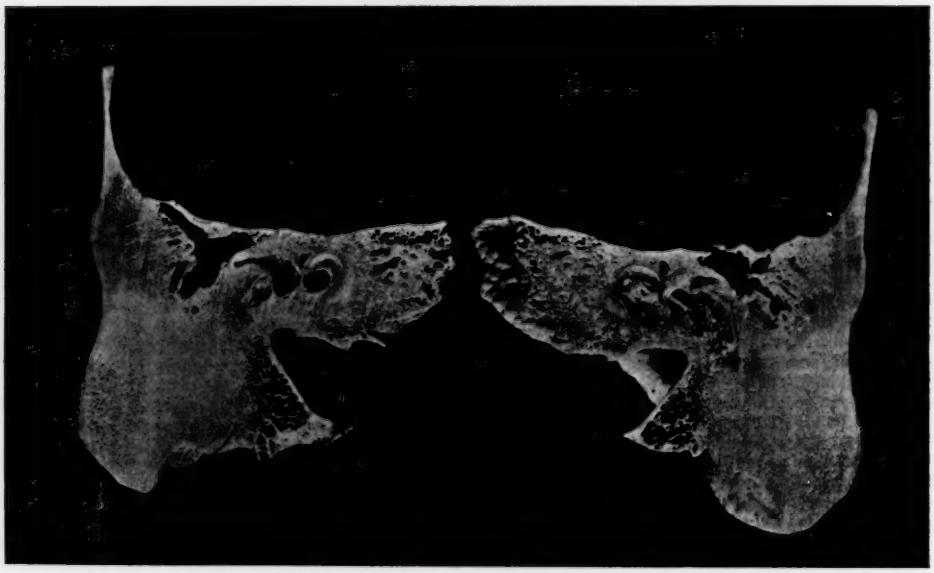
frequently when operating for chronic suppuration. I have made sections of a certain number of bones in which chronic suppuration and its sequelæ have been present, and the very great majority are of the infantile types. The density of the outer wall has always been ascribed to an osteosclerosis due to chronic suppuration in the antrum, a theory which I cannot hold; for, as we see, the condition is a normal anatomical one in about 20 per cent. of all bones, and it is inconceivable how such a great change can take place from the cavity of the antrum, and also without totally obliterating the "fœtal cells" which would be the first to be attacked, but which can still be seen in most of my sections of infantile bones in which chronic suppuration has been present. Sections of the dense outer wall removed during the radical operation for chronic suppuration have been made for me by Mr. G. J. Jenkins. There are no signs of any pathological change suggesting osteosclerosis. In my opinion the anatomical conditions seen in the infantile types are factors in producing chronic suppuration and the dense outer antral wall is one of the factors and not a result. If one were given the choice of temporal bones, preference, I think, would be given to the cellular type as being safer in case of infection of the antrum.

FIG. 2.



Right temporal bone of a man aged 42 years.

FIG. 3.



Right temporal bone of an adult.

2. *Influence in operations for suppuration.*—These infantile

types must be expected when operating for chronic suppuration and its sequelæ. Apart from the difficulty of opening the antrum, on account of the density of the outer antral wall which may be three-quarters of an inch (19 mm.) in thickness, we must always expect to find a forward lateral sinus, and, as in the cellular types, the antrum may be very small or highly placed, or both, and the middle fossa may dip down, causing Macewen's triangle to lead to the dura mater. There is also more chance of injuring the facial nerve in its descending course, especially if the antrum is small or highly placed, or both.

If the outer wall is dense and symptoms pointing to intracranial complications are present careful examination of the posterior antral wall must be made. In cases in which signs and symptoms of acute suppuration in the antrum are present without pronounced signs behind the ear it is wise to open the antrum first, and not the mastoid process; for an infantile type is probably present with a forward sinus and a diploëtic mastoid process. At the same time care must be taken both in acute and chronic suppuration that infected cells are not present in the mastoid process; for, as we have seen, a dense outer antral wall may be associated with the presence of mastoid cells, and if they are not dealt with further trouble will occur.

Savile-row, W.

THE LYMPHATICS OF THE TESTICLE.

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ALTHOUGH the general disposition of the lymphatic glands of the testis has been known from the early days of the history of the lymphatic system, it is only recently that the possibility of excising them in malignant disease has come to be considered seriously. Referring to a paper on this subject by Dr. Roberts, Professor W. Osler says, "It would seem reasonable in all cases to remove them as well as the primary tumour."[1] This remark led us to collect some specimens injected with Prussian blue with the object of ascertaining whether the arrangement of the glands would permit complete excision, and a paper by Mr. J. Bland-Sutton in THE LANCET[2] induced us to complete the dissection of the preparations, ten in number, which we have obtained. The dissections, though showing nothing new, have enabled us to define the extent of the "lymphatic area" of the testis, and therefore the extent of a truly radical operation.

We have used full-time fœtuses only, and it may be argued that the anatomy of the glands presented in our specimens is not the same as in subjects of middle age. The number of lymphatic glands is said to diminish with increasing age, but, since the introduction of formalin as a preservative into the dissecting room, it has become evident that even in very aged subjects glands are numerous in normal situations; even though there should be an apparent decrease in number, it is doubtful whether this is due to complete atrophy. If so, it is difficult to account for the presence of the large numbers of enlarged glands which may be found in malignant disease in different parts of the body, even in aged subjects. In the fully injected axilla of a fœtus is seen a far better picture of what is to be expected and found in the axilla of a patient suffering from mammary carcinoma than dissections of the adult axilla can show.

Lymphatic vessels.—The capillary plexus of the organ is so close that by puncture at any point a good injection can almost always be obtained. The collecting vessels, four to eight in number, pass out of the mediastinum and ascend with the veins in the cord and in the subperitoneal tissues over the psoas as far as the point where the spermatic vessels cross the ureter. Here they part from the blood-vessels and from each other, and spray themselves in graceful curves, "fountain-wise," into the lumbar glands. In the upper part of their abdominal course some of the vessels divide, sending one branch to another vessel in the leash; in this way any vessel may empty its contents into more than one gland.

Lymphatic glands.—The *primary glands* (i.e., those receiving direct vessels from the testis) are those members of the lumbar group in front of and by the sides of the aorta and vena cava below the level of the renal veins, and one member of the external iliac group. Each testicle has its own set of glands which communicate with each other and both sets receive lymph from other structures.

Table showing Number and Situation of Injected Primary Glands in Each Specimen.

Specimen.	To right of vena cava.	In front of vena cava.	Between aorta and vena cava.	In front of aorta.		To left of aorta.
1	0	1	1	0	0	1
2	0	1	2	0	3	2
3	0	1	2	1	0	2
4	0	1	2	2	2	3
5	0	0	3	2	Not injected.	
6	0	1	1	0	2	1
7	1	0	3	0	0	1
8	0	0	2	1	Not injected.	
9	0	0	2	0	0	1
10	0	0	1	1	Not injected.	
	Right side.					*Left side.*

On the right side: In all the specimens one to three glands lie in the groove between the aorta and vena cava, and in one a gland is deeply placed between the two trunks. In five cases a gland is found on the lower part of the vena cava near the level of the bifurcation of the aorta. In five cases one or more glands lie in front of the aorta between the left renal vein and the origin of the inferior mesenteric artery. In one case a single gland is situated to the right of the vena cava in the angle between it and the right renal vein.

On the left side: In all the specimens glands lie in the tissue on the left side of the aorta, generally in a cluster behind the stem of the inferior mesenteric artery, but one may be placed as high up as the left renal vein and one as low as the angle between the aorta and the left common iliac artery. In three cases two or three glands lie in front of the aorta about and above the origin of the inferior mesenteric artery.

In two specimens we noted the presence of an injected primary gland on the right side at the brim of the pelvis just in front of the ureter. This is the posterior member of the inner chain of the external iliac group and has been described as normal by Zeissl and Horowitz,[3] who injected it by puncture of the inner side of the testis. Cunéo[4] has seen it in several of his specimens and is inclined to regard it as being constant but difficult to inject.

Secondary glands (i.e., those receiving efferent vessels from the primary glands) may be divided into three groups: (1) the primary glands of the same and opposite sides; (2) glands behind and between the two great trunks below and above the level of the renal veins; and (3) a chain along the outer side of each common iliac artery. All these, and especially Group 3, become injected with remarkable rapidity, rendering it a matter of difficulty to distinguish between primary and secondary glands. It sometimes happens, as in others parts of the body, that a gland which appears to be secondary proves on careful dissection to be primary, being entered by a direct vessel which crosses but does not enter a neighbouring gland. Many secondary glands are filled in a well injected specimen and can only be distinguished from the primary glands by tracing each collecting vessel to its termination.

These specimens show that the glands vary so much in number and arrangement that it is impossible to illustrate them by a drawing from any single specimen. For surgical purposes it is advisable to regard the glands as lying in

[1] Osler: THE LANCET, May 25th, 1907, p. 1409.
[2] Bland-Sutton: THE LANCET, Nov. 13th, 1909, p. 1406.
[3] Zeissl and Horowitz, in Poirier and Charpy, Lymphatics, translated by C. Leaf, p. 161.
[4] Cunéo: Bulletin de la Société d'Anatomie, 1901.

various parts of an area bounded above by the renal veins, at the sides by lines drawn vertically a finger's breadth outside the vena cava and aorta respectively, and prolonged to cross the external iliac arteries about the junction of the upper and middle thirds, below by lines drawn from the bifurcation of the aorta to meet the extremities of the vertical lines. The portions of the area containing the right and left glands overlap by the breadth of the aorta. As the left renal vein crosses the aorta just below the origin of the superior mesenteric artery a considerable part of the area is covered by the head of the pancreas and the duodenum; the mesentery crosses the right portion of the area below the duodenum, and the inferior mesenteric artery lies in the left part, hiding some of the left glands.

Malignant disease of the testicle is well known to be an exceedingly fatal affection. As a rule the primary tumour is readily removeable and local recurrence is uncommon; in a large proportion of cases recurrence manifests itself in the lumbar glands and visceral metastases are frequent. Mr. Russell J. Howard [5] has published a most valuable clinical study of 57 cases, and of these found that in 8 the glands were affected when the patient first came for examination; in two other cases the enlargement was doubtful, but both patients subsequently died with secondary deposits in the lumbar glands. Out of 36 cases traced after operation 27 had recurrences, and of these 18 had definite glandular involvement. Of two cases which died after operation one already had disease of the lumbar glands. Though every effort was made to trace the cases only two patients were definitely known to be alive three years after the operation.

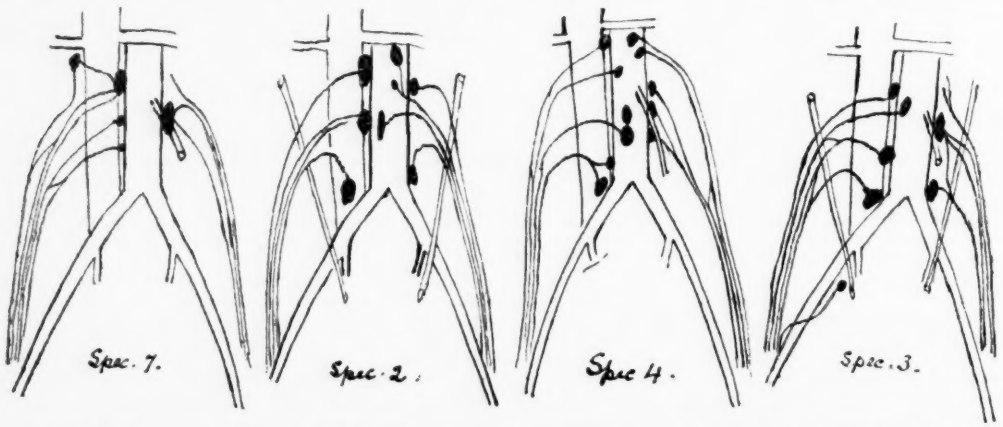
When the disease is advanced a large deep-seated mass may be felt on one side of the spinal column near the umbilicus; it is fixed and nodular, does not move with respiration, and may transmit the pulsations. In one of Mr. Howard's cases a large mass was present in the left iliac region, and in another the inguinal glands were enlarged though the primary growth had not involved the scrotal tissues.

The early glandular matastasis which occurs in this disease is readily explained by the richness of the lymphatic plexus of the testis; owing to the division of vessels which so frequently occurs infection may be conveyed from a small focus in the testis to several primary glands. Involvement of the iliac glands may be primary by means of the vessel above described running to the external iliac glands, or secondary, by the free backwash from the lumbar to the iliac glands, which is so noticeable in injections. As the inguinal glands never receive vessels from the testis itself Mr. Howard's case can only be explained by retrograde infection.

It is clear that the present surgical treatment of malignant disease of the testis is most unsatisfactory, and that great improvement might result if the associated lymphatic area could be removed with the diseased organ. At least two attempts have been made to bring the treatment of this disease into line with that of malignant disease of other organs.

In October, 1901, Dr. J. B. Roberts of Philadelphia [6] removed a recurrent growth in the inguinal region, following castration for carcinoma of the testicle, and also removed some of the lumbar lymphatic glands in the following way. The abdomen was opened and the peritoneum in front of the aorta divided, and the fatty tissue lying over the vessel at its bifurcation was removed. In this fat several small lymph glands were recognised. The pre-aortic cellulo-adipose tissue was removed with scalpel and scissors until the front of the aorta was denuded from its bifurcation to a point about two inches higher up. The patient developed intestinal obstruction, a fæcal fistula formed, and death occurred from peritonitis. Examination of the tissue removed showed that it contained four lymph glands, two of which showed commencing disease.

In September, 1909, Mr. J. Bland-Sutton [7] attempted the removal of the lumbar glands in the following way. The right testicle was exposed and freed, and the cord was isolated up to the internal abdominal ring. The abdominal wall was then incised upwards in the linea semilunaris down to the peritoneum. The peritoneum was stripped forwards, the vas was ligatured at the brim of the pelvis, and the spermatic vessels were tied close to the vena cava. "At this stage the retro-peritoneal tissues of the right lumbar region were well exposed, and this enabled me to examine the parts about the aorta and search for enlarged lymph glands. I found one on a level with the third lumbar vertebra, lying on the anterior face of the vena cava; although as big as a haricot bean it shelled out easily. A very careful search was made for other lymph glands, but without success." Examination of the parts removed showed that the testicular tumour was malignant and that the one gland removed was already affected.



It is clear that any operation on the lumbar glands to be sufficient must include the removal of all those glands receiving direct vessels from the testis. These vary so much in number and position, and are so difficult to detect in fat subjects, that the only effective way of securing them is to extirpate the cellulo-fatty tissue from a given area in which the glands are known to lie. It is comparatively useless to search for and remove any glands which appear to be affected; a gland may be perfectly normal to the naked eye and still contain carcinomatous elements. The essence of the modern operations for malignant disease is the removal of masses of tissue known to contain glands, without any reference to individual glands; the "careful search" for glands is abolished.

Reference to the description and drawings of the lymphatics will show that the only effective method of removing the lumbar glands would be to strip the aorta and vena cava, the common iliac vessels, the proximal third or so of the external iliac vessels, the upper part of the spermatic vessels on either side, and the trunk of the inferior mesenteric artery, of all the cellulo-fatty tissue lying on, around, and between them from the level of the renal vessels downwards. It cannot be allowed that either the operation of Dr. Roberts or that of Mr. Bland-Sutton warrant the use of the term "radical"; by neither method is the "lymphatic area" removed.

We must conclude that the arrangement of the lymphatics

[5] Russell J. Howard: Practitioner, 1907, vol. lxxix., p. 794.
[6] J. B. Roberts: Annals of Surgery, 1902, vol. xxxvi., p. 539.
[7] Loc. cit.

of the testis is such that the complete removal of the "lymphatic area" is exceedingly difficult and dangerous, if not impracticable. When the right testis is diseased in some fortunate cases it may be feasible to secure all the primary glands if these happen to lie superficially on the vena cava, to its outer side, and between it and the aorta. For this the transperitoneal method appears to be preferable to the retroperitoneal exposure of Mr. Bland-Sutton. The operation appears to be feasible, and in a suitable case we should attempt it; but it must not be regarded as a truly radical method, as in only a small proportion of cases will it be possible to secure all the primary glands. When the disease is on the left side the intimate relations of the glands to the inferior mesenteric vessels and the renal vessels, and the fact that many of them lie under the duodenum, appear to forbid even a partial operation.

PERFORATIVE PERITONITIS ORIGINATING IN POUCHES OF THE LARGE INTESTINE.

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THE recent discussion in the columns of THE LANCET upon intestinal pouches has induced us to make this further contribution to the subject of diverticula of the large bowel, to the clinical aspect of which, at any rate, we feel that sufficient attention has not hitherto been paid. Possibly these cases of perforative peritonitis due to secondary changes in colonic pouches are not in reality so uncommon as the literature would lead us to believe, since by a curious chance two patients with this condition were operated upon by one of us within the short space of a fortnight, and only a year before a similar case was admitted into hospital under the care of a colleague, the patient being in an absolutely moribund condition and dying about an hour after his arrival in the ward.

CASE 1.—The patient, a man aged 70 years, was admitted into the Middlesex Hospital on May 22nd, 1909, with symptoms of peritonitis. He had enjoyed good health up to a week before his admission into the hospital, when he was suddenly seized with severe pain in the lower part of the abdomen, but it was not until the bowels had remained obstinately confined for nearly a week despite aperients and until vomiting had supervened that medical advice was sought. A small evacuation followed the administration of an enema, but a second enema yielded no result, and the vomiting became more severe. When the patient was examined after his arrival at the hospital the abdomen was found to be enormously distended and uniformly tender and it did not move with respiration; the temperature was 100·2° F. and the pulse was 96. A rectal examination revealed little except a tender pelvic peritoneum. The case was regarded as one of probable appendicitis with spreading peritonitis and paralytic distension of the bowel.

A median sub-umbilical incision was made, when the coils of bowel were exposed and were everywhere found to be greatly distended and covered with flakes of partly organised lymph. The vermiform appendix was found to share in the inflammatory process and it was removed, but its appearance was regarded as scarcely accounting for the severe peritonitis present. On separating some adhesions to the mesial side of the ascending colon and cæcum a quantity of thick pus escaped. The possibility of a perforated stercoral ulcer was considered, and the lower segments of the large bowel were examined for the existence of a cause of obstruction. The sigmoid was found to be somewhat thickened and to be beset with diverticula, but at the time of the operation these were not regarded as having any causal relationship to the peritonitis. Two drainage-tubes were inserted—one in the lower end of the median incision, the other through a puncture in the loin. The abdomen was closed with through-and-through sutures of silkworm-gut. The vomiting ceased after the operation, but the pulse gradually increased in rapidity, and the patient died about 18 hours after.

Post-mortem examination revealed numerous diverticula of various sizes along the whole length of the large intestine, especially marked in the sigmoid flexure, and arising in connexion with appendices epiploicæ; these contained firm plugs of inspissated fæcal material. One of these saccules situated in the ascending colon about 5½ inches from the cæcum had perforated; the perforation was somewhat round in shape, the edges were much thickened, and the aperture had a diameter of a third of an inch. A condition of diffuse peritonitis was present.

CASE 2.—The patient, a man, aged 57 years, markedly obese, after a four-mile walk on the morning of June 6th, 1909, was suddenly seized with very severe pain in the abdomen while taking his mid-day meal. He became somewhat collapsed, and required help to reach his bedroom. Almost immediately after the onset of the pain, which was accompanied by vomiting, a loose motion was passed. When seen with Dr. H. B. Shepherd about seven hours after the commencement of the attack the patient was lying on his left side with his knees drawn up on the abdomen. There was great tenderness on pressure over the left iliac fossa, and most marked cutaneous hyperæsthesia was present in this region; the rest of the belly wall was soft. The liver dulness was normal, and there was no evidence of free fluid in the abdominal cavity; the temperature was subnormal and the pulse was 100. There was no swelling at any of the hernial rings, but the patient had worn a truss for over 20 years for an alleged double inguinal rupture. Examination of the urine revealed no abnormality. The symptoms strongly suggested appendicitis and the possibility of a left-sided appendix was considered.

The abdomen was opened through the left rectus, and on incising the peritoneum about 1½ ounces of thin purulent fluid escaped from the left iliac fossa. A band of omentum was found crossing the sigmoid to the left internal abdominal ring and was removed. About two inches above the point where this crossed the bowel was a diverticulum apparently originating in connexion with an appendix epiploica, which contained a pellet of fæcal material; the pouch had perforated at its tip and a fæcal mass appeared to be undergoing a process of extrusion. The diverticulum was removed and the stump was ligatured and invaginated by a purse-string suture of thread. Several other smaller pouches were found along the descending and iliac colon and another at the commencement of the ascending colon; all these appeared to be situated along one of the tæniæ coli and to be related to the appendices epiploicæ. The abdomen was closed with through-and-through sutures of thread, a drainage-tube being inserted through the incision into the left iliac fossa and a second tube into the pelvis through a separate suprapubic stab. There was nothing remarkable in the after-history of the case and the patient is now in excellent health.

CASE 3.—The third case is that of a man, aged 65 years, who died about an hour after admission into the Middlesex Hospital. The whole length of the colon presented scores of small pouches, into most of which the tip of the little finger could be introduced. The walls of the pouches were thin and appeared to consist of only a thin layer of mucous membrane and peritoneum. Several of the pouches contained hardened fæcal material. A little below the splenic flexure there were matted adhesions which inclosed a little sac communicating with the colon. The adhesions had given rise to a certain amount of intestinal obstruction, since there was great distension of the small intestine and of the large as far as the splenic flexure.

During the last three years two other cases have been met with in the post-mortem room at the Middlesex Hospital in which, during life, no suspicion was entertained of the existence of pouches in the intestine. We are indebted to Dr. W. Essex Wynter for permission to include these in this paper. One case was that of a woman, aged 68 years, who was admitted for lobar pneumonia; the other, that of a male, aged 69 years, who had died from bronchitis and cardiac failure. In the case of the woman numerous pouches were present in the pelvic colon; they were situated mostly along each side of one of the tæniæ coli and contained scybalous masses. They were not connected with the appendices epiploicæ. There were also large numbers of pouches in the upper few feet of the

jejunum varying in size from a pea to an unshelled walnut: these appeared primarily to have projected between the layers of the mesentery. As seen from the interior of the bowel all had well-defined circular mouths of smaller diameter than the protrusions themselves. A portion of the jejunum of this case has been presented to the Museum of the Royal College of Surgeons of England. In the case of the male the pouches extended into the base of attachment of the appendices epiploicæ, and were situated in the iliac and pelvic colon. As Mr. Bland-Sutton has demonstrated, if there be any tendency to the formation of diverticula, the soft fatty tissue of the appendix epiploica continuous with the subserous fat forms a point of lowered resistance.

The earliest reference to the subject under notice which we have been able to find is under the title of "False Diverticula of Intestine" in the Transactions of the Pathological Society, by Dr. Bristowe in 1854. Dr. W. H. Maxwell Telling, in his excellent article in THE LANCET,[1] has made an exhaustive contribution to the subject of the secondary pathological processes which may occur in connexion with acquired diverticula of the sigmoid flexure. The object of the present communication is only to emphasise one of the more important of these. The fact that three out of the five cases which have come under the observation of one or other of the writers during the last three years have been cases of perforative peritonitis suggests that this complication must be more frequent than is perhaps usually held. Attention has been drawn by Mr. Bland-Sutton and other authors to the fact that left-sided abdominal pain of sudden onset may arise in connexion with perforation of a sigmoid diverticulum, but perforation of a pouch in the ascending colon, as in Case 1, shows that this exceptional occurrence must be added to the category of pathological phenomena associated with pain commencing on the right side of the abdomen.

A CASE OF
SPINAL MENINGITIS RESEMBLING TUMOUR OF SPINAL CORD; LAMINECTOMY; RECOVERY.

BY RICHARD ROPER, F.R.C.S. EDIN.
SENIOR ASSISTANT MEDICAL OFFICER TO ST. MARYLEBONE INFIRMARY

THE patient, a man aged 41 years, was admitted to St. Marylebone Infirmary on July 2nd, 1909, with a history of pain in the arms since the winter of 1908–09. The pain had become more severe during the six weeks before admission. On examination there were found signs of healed tuberculosis at the apex of the right lung. The heart was not enlarged, but other changes in the cardio-vascular system were thickened arteries, water-hammer pulse, and roughened first sound in the aortic area. The pupils were equal and reacted to light and accommodation; the knee-jerks were brisk; the right plantar reflex was absent and the left gave a flexor response. No other changes were noticed in the nervous system at that time. I found a well-marked scar on the glans penis.

The patient was allowed to get up, and he had no further symptoms until July 21st, when he complained of much pain in the back and was kept in bed. On August 4th a lesion of the spinal cord was evident. The cranial nerves were normal, and there were no changes in the fundus oculi. Both arms and legs were distinctly weak, the weakness being more marked in the legs. At the level of the eleventh dorsal segment there was a band of hyperæsthesia, and sensation to wool was impaired from the knees downwards. The knee-jerks were brisk and ankle clonus was present. Both plantar reflexes were extensor. The elbow- and wrist-jerks were absent. He was inclined to have retention of urine and there was some difficulty in starting micturition. Except for some tenderness in the region of the ninth dorsal spine, no changes were apparent in the spinal column. On August 9th the weakness of the hands and arms had increased rapidly and he was no longer able to hold spoon or fork. On the 18th he had anæsthesia and analgesia from two inches below the umbilicus downwards to the feet. By August 25th the anæsthesia had spread up to the level of the eighth rib and the weakness of the hands and arms was more marked. Calmette's tuberculin test was tried and was positive in 16 hours, which may have been accounted for by the signs of old tubercle at the right apex. On Sept. 1st he had double incontinence and began to complain of much more pain in the back.

On re-examination of the nervous system on Oct. 2nd no other changes were found in the cranial nerves except that the pupils were very small. The loss of power in the legs was complete and they were kept flexed in a spastic condition. The arms could just be raised from the bed, but the patient was practically helpless. There were absolute anæsthesia and analgesia up to two inches below the nipple, and sensation was impaired up to the level of the third rib. The lines of both forms of anæsthesia were sharply defined. The abdominal reflexes were absent, but all reflexes below this were much increased. Patellar and ankle clonus were present and the plantar reflexes were extensor. There were no trophic changes. He had double incontinence.

Since the signs of cord lesion had become evident potassium iodide had been given in increasing doses, and for some weeks he had had as much as 50 grains of potassium iodide with drachm doses of the solution of perchloride of mercury. All the symptoms gradually increased and the pain was severe enough to need repeated injections of morphia. No primary malignant focus was found although search was made. A diagnosis of spinal tumour, involving the fifth dorsal segment, was made. The chief points in favour of this were: (1) Early onset of pain, increasing in severity; (2) sharp definition of anæsthesia, both absolute and relative; and (3) absence of improvement with large doses of potassium iodide.

On Oct. 6th I performed laminectomy. A mixture of chloroform (two parts) and ether (three parts) was administered at 9.30 A.M., and the laminæ of the first, second, third, and fourth dorsal vertebræ were removed. The thecal fat appeared normal and no tumour on the anterior or posterior aspect of the cord was found. The bones appeared normal. The dura mater was incised for three inches and the only apparent pathological condition was the presence of adhesions between the dura mater and the pia arachnoid. The cerebro-spinal fluid was under fair pressure but did not spurt out, and it soon stopped flowing at the time of operation. A director was passed in an upward and downward direction under the dura mater for three inches, but no obstruction was found. Two fine catgut sutures brought the dura mater together, and the muscles were sutured over this with stouter catgut. Skin sutures were put in widely apart so as to allow for any leakage of cerebro-spinal fluid.

At 9.15 P.M. the same day the pupils were noticed to be larger. For some days after the operation the temperature was raised. Pain had quite disappeared. Cerebro-spinal fluid leaked for about three weeks, and at the end of this time the wound was sound, although there was still a considerable collection of this fluid under the scar. On Oct. 27th the patient's condition had much improved. Power in the legs and arms began to return and he was able to flex and extend the legs freely. Sensation had returned on the right side to a point four inches above the umbilicus, and on the left at the level of the umbilicus. There was complete control over the bladder sphincter but not over the anal sphincter. As the condition was thought to be syphilitic, and potassium iodide had had no effect, 100 grains of arsacetin were given into the pectoral muscles in 10-grain doses dissolved in 1 drachm of sterile water. These doses were given every other day.

The condition of the patient on Dec. 16th was as follows. The pupils were equal, of natural size, and reacted well to accommodation and light. He was able to wash and feed himself and his grip was fair in both hands. He was able to raise himself in bed by the use of his pulley. The legs were still spastic, although they could be abducted, flexed, and extended against some resistance. From the level of the anterior superior spine upwards sensation to the lightest touch with wool was perfect. Below this level sensation to light touch was impaired in patches in both legs. Both wrist-jerks were present; the abdominal reflexes were absent; the knee-jerks were still exaggerated; ankle clonus was present; both plantar reflexes were extensor. He had completely regained control over the bladder, and although he had not regained control over the anal sphincter, impulses denoting desire for defæcation now made themselves felt.

[1] THE LANCET, March 21st (p. 843) and 28th (p. 928), 1908.

General nutrition had much improved and he was quite free from pain.

I am indebted to Mr. J. R. Lunn, medical superintendent, for permission to publish this case.

Note.—Since writing the above I have to report that the patient is now (February, 1910) able to walk without assistance, though with a somewhat spastic gait, and that he has full control over both sphincters.

St. Marylebone Infirmary, W.

TWO CONSECUTIVE PERFORATIONS OF A PEPTIC JEJUNAL ULCER FOLLOWING GASTRO-JEJUNOSTOMY FOR A PERFORATED GASTRIC ULCER.

BY A. ERNEST MAYLARD, M.B., B.S. LOND.,
SURGEON TO THE VICTORIA INFIRMARY, GLASGOW.

IN a recent paper on Some Cases of Perforation of Stomach and Duodenal Ulcer[1] Mr. J. Grant Andrew recorded an exceptional instance of a triple consecutive perforation of gastric ulceration. The case occurred in my wards, and it can be considered little else than a remarkable coincidence that I am able to record a second instance of a similar character, though differing in this unique respect, that of the three perforations the last two were connected with jejunal ulceration. The history of the case was as follows:

A married woman, aged 51 years, was admitted to the Victoria Infirmary in February, 1907, suffering from a perforated gastric ulcer. At the operation a perforation was found on the anterior wall of the stomach near the pylorus. It was about half an inch long and a quarter of an inch wide with irregular edges, and seemed to be the centre of a large ulcer. The perforation was closed with Lembert sutures and a piece of omentum was also fixed over the lesion. An anterior gastro-jejunostomy was performed.

The patient remained well until October of the same year—i.e., about eight months after the operation—when she was seized with an attack of "indigestion." This terminated in the course of three days in an acute crisis with symptoms of perforation. The abdomen was opened in the middle line. A little fluid escaped from the peritoneal cavity, and the parts presented the appearance of a fibrinous peritonitis. Numerous adhesions were encountered, and on separating these a perforation was found large enough to admit a No. 6 urethral catheter. It was situated on the anterior surface of the distal limb of the jejunum about 1½ inches from the gastro-jejunal orifice. The perforation was closed by a purse-string suture, and over this an interrupted series of Lembert sutures. The parts were swabbed dry, and the parietal wound was completely closed.

The patient remained well until November, 1909—i.e., for two years after the second operation—when she again suffered from "indigestion," and after an attack which lasted for a couple of days she was suddenly seized with acute abdominal pain and other symptoms suggestive of perforation. The abdomen was opened by a transverse incision midway between the umbilicus and xiphoid. The rectus muscle on each side was partially divided and the peritoneal cavity was opened. Numerous adhesions were found between the stomach, bowel, and anterior parietes. On turning up the omentum a small perforation was discovered in the efferent limb of the jejunum, about an inch or so below the site of the previous perforation. The perforation was about an eighth of an inch in diameter and close to the mesenteric attachment. It was easily closed by a purse-string suture, and for greater security a piece of omentum was stitched over it. From this (her third) operation she made a complete recovery, and left the institution about five weeks after with a medicine containing alkalies to be taken occasionally.

The last two perforations in the above case may be considered as coming under the head of strictly ulcerative lesions of the jejunum; that is to say, they were not of that class where the ulceration primarily commences at the line of anastomosis, and is, in one sense therefore, traumatic in origin. Both ulcers occurred at a short distance from the gastro-jejunal line of union, and probably receive their pathological explanation from an initial lesion produced by the action of the acid gastric secretion with subsequent peptic digestion. The association of the ulcers with an anterior gastro-jejunostomy only goes to add another illustration to the many that have been recorded of this somewhat striking connexion. Reflecting upon the treatment adopted, I regret that neither the report of the operation nor my memory permits me to say why I did an anterior instead of a posterior gastro-jejunostomy. I do not think that altogether in about 200 cases of gastro-jejunostomy I have more than half a dozen times performed the anterior operation, and there has always been some special reason for selecting the less preferable method. The occurrence of a second ulcer independent of, and distant from, the first jejunal ulcer indicates that the same cause must have been at work as produced the first; and as this seemed likely to be the action of a hyperacid gastric juice greater precautions have been exercised in the way of prescribing alkalies to check excessive acidity and so prevent the attacks of "indigestion" which seem to have been the immediate precursors of the perforations.

Glasgow.

[1] THE LANCET, Oct. 30th, 1909, p. 1273.

A CASE OF RUPTURE OF THE UTERUS TREATED BY SUTURE OF THE RENT PER VAGINAM AND DRAINAGE.[1]

BY HERBERT J. PATERSON, M.B., B.C. CANTAB., F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE LONDON TEMPERANCE HOSPITAL, ETC.

THE patient, a married woman, aged 25 years, had had three children previously, the last 18 months ago. After the birth of this child she was laid up in the infirmary for 14 weeks, and some operation for "womb trouble" (? curetting) was performed. There was nothing unusual in connexion with the two previous confinements.

The history of her recent confinement was as follows. The waters broke on August 11th, 1909. Dr. Mulloy saw the patient on the 13th. The cervix was slightly dilated, there were no labour pains, and the cord was prolapsed and pulseless, so nothing was done. Dr. Mulloy was called again at 10 P.M. on the night of the 14th. The patient was then having labour pains, but there was slight dilatation of the cervix, and the cord was prolapsed and pulseless. Under chloroform the cervix was slowly dilated until the knuckles of the open hand could be passed through the internal os. The right foot and hand presented with the pulseless cord between them. Delivery was effected without difficulty by traction on the foot, the back of the child being rotated towards the pubes, and flexion of the after-coming head secured by introducing a finger into the child's mouth. No instruments were used. The placenta was expressed with ease. On introducing the hand into the vagina it passed into the abdominal cavity. Dr. Mulloy realising the gravity of the patient's condition at once sent her up to the London Temperance Hospital.

The condition on admission (note by Dr. Russell Square) was as follows. There was some bleeding from the vagina and the patient was very collapsed, sunken round the eyes, and extremely restless. The extremities and the face were cold and damp with perspiration; the pulse was very small, soft, and uncountable. Some tenderness was present over the abdomen, increased by gentle pressure with the hand. There was some dulness in the flanks. When I saw the patient about 3 A.M. she was extremely collapsed, although somewhat better than on admission. The pulse was very feeble, the rate being about 140. The abdomen was somewhat distended and there was some dulness in the flanks. The vagina was full of blood-clot and a coil of intestine was felt protruding through a large rent in the vaginal vault.

Ether being given by the open method, a loop of large intestine (apparently sigmoid) was found to be prolapsed through an extensive rent in the posterior vaginal wall, through which the fist could be easily passed into the abdominal cavity. The left parametrium was involved in the tear, and there was free arterial hæmorrhage from two large vessels; these were

[1] A communication made to the Gynæcological and Obstetrical Section of the Royal Society of Medicine on Nov. 11th, 1909.

secured by ligature. The large intestine was pushed back into the abdominal cavity and a considerable quantity of blood was removed from Douglas's pouch. Further examination showed that the cervix was completely torn through, the tear extending upwards and involving the uterus for a distance of at least 4 inches, but as the uterus appeared to be firmly retracted no attempt was made to define accurately the upper limit of the tear. The torn edge of the cervix and lower part of the uterus were approximated by three stout catgut sutures. The torn edges of the peritoneum and vaginal wall were seized with forceps, and a purse-string suture was passed right round the tear, the suture being passed alternately through the vaginal wall and peritoneum. A large rubber tube was then inserted into Douglas's pouch, and the purse-string suture was passed tightly round it. The patient was much collapsed at the end of the operation, which lasted under half an hour, but gradually rallied. Continuous saline proctoclysis was maintained for 60 hours, and the patient made a good recovery, although her temperature varied between 99° and 101° F. for the first 12 days after admission. The tube was removed on the sixth day.

On Sept. 8th the patient was examined under ether. The uterus was not felt above the pelvic brim. The cervix was posterior in the pelvis, the texture was firm, and the canal was closed. The vagina was narrowed posteriorly. In the posterior fornix was a roughened area about one inch in diameter. Per speculum was seen a granulating area rather larger than a shilling-piece immediately behind the cervix. Bimanually the uterus was freely moveable. The sound passed, concavity backwards, four inches. Per rectum was felt a slight thickening on the posterior wall of the uterus extending more than half-way up towards the left cornu. The pelvis was not contracted.

So far as I am aware, the method of vaginal suture and drainage was not adopted in any of the recorded cases of ruptured uterus. It appears to me that those who advocate the treatment of this accident by hysterectomy lay too much stress on the difficulty of controlling hæmorrhage. I think that Nature's ability to deal with internal hæmorrhage is often under-estimated. A perusal of the recorded cases leads one to think that in some instances recovery ensued, *not* because of, but in spite of, hysterectomy. To perform hysterectomy if suture be practicable seems to me an unsurgical procedure. As regards the case here recorded, I am strongly of the opinion that the patient was not in a fit condition for hysterectomy, and that this method of treatment would most probably have led to a fatal result.

Upper Wimpole-street, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SURGICAL SECTION.

Cancer of the Pylorus.

A MEETING of this section was held on Feb. 8th, Mr. RICKMAN J. GODLEE, the President, being in the chair.

Mr. E W. HEY GROVES read a paper on the Radical Operation for Cancer of the Pylorus, with special reference to the advantages of the two-stage operation and to the question of the removal of the associated lymphatics, illustrated by numerous lantern slides. He first gave a brief account of eight cases of his own in which he had performed excision. Of these eight cases six were done in two stages, first a gastro-enterostomy, and in about 10 days later partial gastrectomy. Of these only one died. The other two, in which the whole operation was performed at one sitting, died. The symptoms and diagnosis were discussed with especial reference to the scope of exploratory operations. In all doubtful cases no hesitation ought to be felt in advising exploratory laparotomy. But even when exposed to sight and touch the stomach tumours are often impossible to differentiate. Cases were related in which benign swellings were excised under the impression that they were malignant. Other cases which were regarded as hopelessly malignant lived for many years after gastro-enterostomy to prove the mistaken diagnosis. Those facts were all strong arguments for the two-stage operation in which a piece of the growth might be taken for histological examination before a radical excision was performed. The mortality results of large series of resection cases were reviewed in which it was shown that in over 1000 cases between 26 and 51 per cent. died. With these figures were compared 18 cases treated by the two-stage method with only three deaths. The high mortality was due to three chief causes—shock, peritonitis, and lung complications. Reasons were shown why the two-stage method went far towards avoiding all these dangers. It was pointed out that if the interval between the two stages was not longer than 14 days no difficulty was experienced from adhesions when excision was undertaken. The distribution of the lymphatics of the stomach was reviewed and especial stress laid upon the lymph vessels in the great omentum which loop downwards and then up over the colon to the glands above the pancreas. Pathological evidence was given of the actual spread of cancer of the stomach by way of the omentum to the organs in the pelvis. Therefore it was considered that every complete removal of cancer of the pylorus should include that of the great omentum. Details were given of a method of operation which carried this out, and it was contended that it was quite as easy to remove the omentum from the front of the transverse colon as to divide the omentum from the great gastric curve. Lastly, figures were given showing that the ultimate (three year) survival after excision of cancer of the pylorus was only about 7·6 per cent. of those submitted to operation and about 15 per cent. of those surviving the operation. It was suggested that these poor ultimate results might be due in part to the incomplete removal of the lymph area associated with the stomach.

Mr. HERBERT J. PATERSON said that the section was greatly indebted to Mr. Groves for coming up from Bristol to give them such an encyclopædic paper on the subject of resection of the stomach. In these days when surgery had reached such a degree of perfection that all moveable organs could if necessary be removed, irremoveable ones stitched, and those which were not amenable to such treatment incised or partly resected, it required considerable ingenuity to suggest a new operative procedure, and Mr. Groves was to be congratulated on having brought forward such a procedure that evening. He thought that Mr. Groves had been unduly pessimistic as to the results of the one-stage operation, so far as the immediate mortality was concerned. For his Hunterian lectures he (Mr. Paterson) had ascertained the results of Kocher, the Mayos, and several other surgeons, and he found that the average mortality after operation was under 20 per cent. When he was in America in 1907 the Mayos told him that they had up to that time performed over 100 resections with a mortality of 14 per cent. Mr. Groves had given them a table showing the causes of death after resection of the stomach, and according to that table 79 per cent. of the deaths which occurred after operation were the result of peritonitis from leakage or other causes. With the improved surgical technique of the present day no self-respecting surgeon could dream of losing so many cases from leakage, or, if he did, he ought not to attempt resection of the stomach. As regards the operation in two stages, he did not think that the immediate mortality was as low as Mr. Groves maintained, because he (Mr. Paterson) knew of several published cases which had ended fatally, but which Mr. Groves had not included in his table. His own experience was that the adhesions which formed after the first operation added considerably to the difficulty of the second operation. Then, too, in some instances the manipulations incidental to the removal of the stomach at the second operation had been sufficient to separate the recently formed adhesions of the gastro-jejunostomy previously performed, so that at the second operation the whole procedure had had to be done over again. Some years back he had called attention to another objection to the operation in two stages—namely, the risk that the subsequent resection might disturb the relations of the previously effected anastomosis, and so lead to regurgitant vomiting. This had happened in the case which he had reported, but he was of opinion that it was a risk which might be guarded against. Yet notwithstanding these objections he had gradually come round to the opinion that on the whole the operation in two stages was to be preferred in many of the cases. In treating cancer of the stomach one was met with a very difficult problem, and one had to decide what was the best course, taking many circumstances into consideration. Therefore, he thought it better, except

perhaps in very early cases, to perform a preliminary gastro-jejunostomy, and then feed the patient up for two or three weeks in order that he might be in a better position to stand the subsequent resection. With regard to the duration of life after operation, there, again, he thought, Mr. Groves was more pessimistic than he need be. Of Kocher's cases he remembered that at least 21 per cent. of those who recovered were well three years after the operation, and he believed that just over 11 per cent. were well five years after operation. It was difficult to criticise Mr. Groves's operative procedure, because one was in the dark as to the difficulty of doing it, but he (Mr. Paterson) felt that patients suffering from gastric carcinoma were usually so feeble when seen by the surgeon that anything which added to the severity of the operation must be carefully considered before it was carried out, and without more practical knowledge of Mr. Groves's method he would not be inclined to add to resection the routine peeling off of the omentum, as it would add to the severity of the operation. But he agreed there was a risk of cancer spreading down the omentum and causing a recurrence in it after the stomach had been removed, and he lost one of his own patients from that cause three and three-quarter years after operation. The patient came up at the end of three and a half years with a huge mass which he took to be a recurrence of the growth in the omentum, and naturally he did not advise operation. Later she came with signs of acute peritonitis and died in a few hours. At the post-mortem examination it was found that the huge mass which had been felt was not cancer, but an inflammatory mass around a stercoral ulcer, which ulcer had been caused by a very small growth in the colon which had caused an annular constriction and led to the accumulation of fæces behind the stricture. In that case if the omentum, or, better still, the transverse colon, had been removed the recurrence would probably have been prevented and the patient's life would have been much prolonged. He wished most emphatically to dissent from one opinion apparently held by Mr. Groves. He had said that in a doubtful case of gastric carcinoma an exploratory operation should be performed, unless the patient gained in body weight under medical treatment. In other words, Mr. Groves held that increase of body weight negatived gastric carcinoma. He (Mr. Paterson) maintained that such an opinion was quite erroneous. Patients with gastric carcinoma often gained considerably in weight as a result of rest and suitable food; he himself had observed a gain of two or three pounds in 10 days. Increase in the body weight was quite compatible with the existence of cancer. He felt loth to disagree with Mr. Groves's plea for a more radical operation in gastric carcinoma, because he so fully agreed that the more radical the operation the better the after-results. At the same time, if he himself adopted a more radical operation he would prefer to resect the omentum and transverse colon, as, indeed, he had done in one case. But taking into consideration the usual condition of patients suffering from gastric carcinoma when they were seen by the surgeon, he was very doubtful how far such an extensive procedure was justifiable. His opinion was that future success in operations for gastric cancer must depend not on adding to the extent of the operation but on earlier diagnosis.

Mr. W. G. SPENCER said he regretted that neither of the preceding speakers had dealt with the desirability of submitting patients to resection of the stomach. The German statistics quoted, of 15 per cent. to 7½ per cent., were really the percentages of a few cases. Neither speaker had quoted English or American statistics on the subject, in which as far as he knew the survivals beyond three or five years were only single cases. He had himself had a series of cases more especially in connexion with his hospital work, from Dr. F. de Havilland Hall and Dr. W. Murrell, selected cases, and he had operated upon them, and as far as he could see, very few of them were reasonably fit to be submitted to the operation. Either the case was far too advanced for the operation, and gastro-jejunostomy had been performed to relieve them for a short time, or the case had been an early one and there was a doubt whether it was malignant. And even in the case of the specimen which Mr. Groves projected on to the screen he felt considerable doubt about its malignancy, without, of course, seeing the serial sections from it, and he thought microscopists would cavil at it. Mr. Paterson had pointed out the objection to carrying out the procedure in two operations; and the mere fact of going up to the origin of the gastric artery and down to and including the omentum increased the gravity of the procedure, and the operative mortality could not be hoped to be anything except considerable. There was an alternative in gastro-jejunostomy, and the operative mortality from that, *qua* gastro-jejunostomy, had been reduced until it was now scarcely anything at all. The results from it were certainly surprisingly favourable. His last case of resection was six months ago. It seemed to him to be an annular hard nodular mass of cancer at the pylorus, and there was a deep excavation running down to the head of the pancreas. That patient got well; but it was a severe operation. The pathologist reported that there was no sign of carcinoma, that it was an inflammatory mass. It would seem that the Germans had a more favourable form of carcinoma for operation than the English ones.

Mr. JONATHAN HUTCHINSON said he could thoroughly endorse Mr. Spencer's views. Amongst the very favourable cases included in the German statistics he thought it probable that some examples of inflammatory and nodular thickening of the pylorus treated by excision had been put down as cancer. Such was probably Billroth's often quoted case in which the patient was well 12 years after pylorectomy for "cancer." He had found it possible in some cases to determine the true nature of an excised "tumour" of the pylorus only by prolonged expert examination of many sections. With regard to the slide in question which Mr. Spencer had remarked upon, he did not think it looked at all like cancer. He asked Mr. Groves whether in his six operations performed in two stages he had found difficulty in excising the required amount of stomach from the position of the gastro-jejunostomy aperture. He (Mr. Hutchinson) was sceptical about the value of excising the great omentum. Knowing how closely it adhered to the colon and how its removal would add to the difficulty of the operation, he doubted whether it increased the chances of life for the patient.

Mr. C. A. BALLANCE expressed his great appreciation of the paper, and said he would like many others to have been present to hear it. He remembered seeing Thiersch, in 1884, remove the pylorus in Leipzig for the first time; he had been practising the matter with two assistants for some weeks previously. The resection of the stomach and the union of the cut end of the stomach to the divided duodenum was completed in very little over an hour. At the end of six weeks he (Mr. Ballance) saw the patient again and she was eating a mutton chop. He did not know how long she lived. When he came back to London he was present at a similar operation, but for that the same preparation had not been undertaken and the operation took 3½ hours. The result was that the patient died very shortly after the operation. Since that time much more was known about gastrectomies and gastro-enterostomies, and Mr. Groves was to be specially congratulated upon his study of the lymphatics in the region of the stomach. He seemed to have attempted to do for the stomach what Halsted had done for the breast. In operations for cancer of the pylorus it would in the future be necessary to do a much wider removal of the peritoneal structures around the pylorus than surgeons up to the present time had been in the habit of doing. He therefore thought that Mr. Groves's paper was in the right direction. The surgeon could not know about the condition of such cases until the abdomen was opened; no one could promise to remove a pylorus until he had seen and handled it. He had three months ago seen an officer who had suffered great hardships in the South African war. For the last five years he had been a victim to dyspepsia, and for the previous three months he had washed his stomach out every day. He found in him a large lump occupying the upper part of the pylorus and extending a considerable way along the lesser curvature. That lump, he had no doubt, was carcinoma which had originated in the chronic inflammation of the stomach which had been going on for five years. He did for him the two-stage operation, which he regarded as by far the best, and in the cases he had done it he remarked that there seemed to be but little shock. He strongly advised a preliminary gastro-enterostomy and at the end of ten days pylorectomy. He did not think there was any risk of displacement or injury of the union between the jejunum and the stomach. After the pylorectomy there was a difficulty for some time in taking food, the reason for

which probably was that the anterior support of the stomach was lost, and that in consequence there was some displacement of the gastro-jejunostomy opening. Examination of the lump by Mr. S. G. Shattock made it very doubtful whether it was carcinoma. All members must have known cases where the disease was found to be too extensive for any operation to be done, and the abdomen had to be closed and the patients left, and then they recovered. There seemed to be some strange condition, occurring rarely, in which an apparently malignant lump disappeared after the abdomen was opened.

The PRESIDENT asked whether it had been proved that there was a circulation downwards in the anterior layer of the great omentum and upwards in the posterior layer. Also was it really possible to peel off the great omentum from the anterior surface of the transverse colon and the upper surface of the transverse mesocolon and leave the serous surfaces behind, or whether when the great omentum was peeled off it left a raw surface, and whether on peeling off the transverse mesocolon one exposed the middle colic artery. Also, could Mr. Groves do that peeling off without making holes in the transverse mesocolon?

Mr. GROVES replied on the discussion. He said that he took the best collected statistics he could find and presented them without expressing very definite views on the matter. The shortest interval in his cases between the two operations was seven days and the longest 28 days. The adhesions which had formed in that time from the first operation were negligible in regard to adding to the difficulty of the operation. Moreover, by the two-stage method the patient felt much better and was better able to stand the procedure. In the case where the great omentum was peeled off he did not think the operation took a bit longer, and it was not difficult except at the left-hand corner. There were many blood-vessels running from the gastro-epiploic vessels to the curvature of the stomach, but when separating back the great omentum one was working in a comparatively avascular area. He spoke with more diffidence in regard to removing the peritoneum from the base of the great omentum to the head of the pancreas. In the two cases he did he found no difficulty in stripping off the layer of peritoneum from the front of the transverse mesocolon, because he kept to the right of the middle colic artery. There was a strip which ran over the front of the head of the pancreas which contained a number of lymphatic vessels. He felt confident that the great omentum could be easily and quickly removed without danger, but he would not say it could be so certainly removed from the front of the head of the pancreas. He was surprised to hear the two secretaries refer to the statistics he put forward as if they were too rosy; he himself regarded them as gloomy. He gathered together the best statistics he could find, and he certainly thought the German figures were the least liable to error. He agreed that there might be room for doubt about the slide projected on the screen which had been discussed by Mr. Spencer and Mr. Hutchinson, and for that reason he asked two independent pathologists to examine the specimen and they both reported that there was no doubt as to its malignancy. Possibly the most instructive portion of the tissue had not been chosen for the purpose. If in the second case, which lived 18 months, he had kept to the left of the middle colic artery she might have been alive still. He now kept to the left of the middle colic artery. If the second operation was done at a not greater interval than ten days from the first there was no difficulty in carrying it out. In answer to the President, he did not know what physiological proof could be given as to the circulation in the great omentum, but Prussian blue had been found to travel from the stomach down the great omentum and into the vessels which looped back again to join the trunks which ran in front of the head of the pancreas.

SECTION OF ANÆSTHETICS.

Lymphatism.

AN adjourned meeting of this section was held on Feb. 4th, Mr. R. GILL, the President, being in the chair.

Dr. E. FARQUHAR BUZZARD, in resuming the discussion on Mr. Bellamy Gardner's paper on Lymphatism, drew attention to the analogy between lymphatism and myasthenia gravis. In both instances the patient might die suddenly. Although many of the myasthenic patients died from sudden cessation of the respiration only, there were others in whom the heart failed at the same time and with equal abruptness. Moreover, in more than 50 per cent. of the cases there was some enlargement of the thymus gland, while in addition clumps of lymphoid cells were found scattered through many of the tissues and organs of the body, especially in the muscles. Abnormalities of the spleen, thyroid gland, pituitary body, and liver had also been discovered in some instances, but the indictment of these organs had never been so severe as that of the thymus.

Dr. RALPH VINCENT said that in his opinion the operation was a far more important factor in the causation of death in cases of lymphatism than was the anæsthetic. A mere digital examination of the naso-pharynx was very likely to bring on a convulsion in a child who was subject to convulsions, and an anæsthetic would act rather as a sedative; indeed, a deep anæsthesia should actually be a safeguard. The cause of the condition was an error in diet during infancy.

It was suggested that a committee should be formed, consisting of anæsthetists, pathologists, radiographers, and others, to collect evidence which might lead to some definite conclusions as to the causation, symptoms, and treatment of lymphatism and allied conditions.

LARYNGOLOGICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Feb. 4th, Dr. DUNDAS GRANT, the President, being in the chair.

Dr. H. J. DAVIS showed the following cases:—1. Foreign Body in the Lung. While a man, aged 53 years, was eating ox-tail soup a piece of bone slipped into the windpipe and found its way into the right lung. It set up pulmonary abscess and empyema; a rib was resected and the abscess was drained. Six weeks later, on coughing, the piece of bone was spat out. The patient, who was under the care of Dr. Seymour Taylor, eventually recovered. 2. Foreign Body in the Œsophagus. The patient was a soldier aged 30 years. A pin 1½ inches long slipped down his throat during sleep and became impacted in the œsophagus. It was grasped with forceps but could not be moved; œsophagoscopic examination was negative; the pin passed into the stomach and was vomited up the same night on recovery from the anæsthetic. 3. Laryngeal Vertigo in a man aged 47 years. Tickling began in the throat; he would then cough for five or ten minutes, become violently giddy, and fall to the ground insensible. The uvula had been removed flush with the palate with some benefit. Though a pipe-smoker, the mere smell of cigarette smoke brought on an attack at once.

Mr. GEORGE WILKINSON showed a photograph of an infant, 8 months old, in whom the Nose was Congenitally Deformed by a deep depression in the middle line below the nasal bones, with wide separation of the nostrils and flattening and broadening of the whole feature.

Mr. W. STUART-LOW showed a case of Lupus of the Nose, Hard Palate, Fauces, and Epiglottis in a girl, aged 10 years, the special feature being the early implication of the epiglottis.

The PRESIDENT showed a case in which a middle-aged man affected with pulmonary tuberculosis had also suffered from extensive tuberculosis of the larynx. The latter had been treated with the galvano-cautery. The punctures were made into an ulcer on the ventricular band and the infiltrated epiglottis and swollen band once every three or four weeks and gave immediate and increasing relief, so that almost complete dysphagia was gradually removed. Inhaling equal parts of anæsthesin and orthoform helped in this. Eventually all the ulceration and nearly all the infiltration disappeared.

Dr. WILLIAM H. KELSON showed a case of Paresis of the Palate, Pharynx, and Œsophagus in a man aged 26 years.

Dr. DAN MACKENZIE showed a case of Congenital Occlusion of the Left Posterior Choana in a girl aged 19 years. After a preliminary submucous resection as far as the vomer the case was treated by chiselling away the vaso-membranous diaphragm and enlarging with a burr to the normal calibre. The result was very good.

Dr. G. WILLIAM HILL showed a case of Papillomatous Laryngeal Growth springing from the right cord and the floor

of the ventricle; a similar growth had been removed 20 years ago from the same patient.

Dr. HILL also showed an Improved Œsophagoscopic Tube.

SECTION OF BALNEOLOGY AND CLIMATOLOGY.

Saline Waters and the Use and Abuse of Common Salt.

A MEETING of this section was held on Jan. 27th, Dr. LEONARD WILLIAMS, the President, being in the chair.

Dr. R. ACKERLEY (Llandrindod Wells) read a paper on Saline Waters and the Use and Abuse of Common Salt. He said that the alleged necessity of taking common salt was disproved by the fact that in ancient and modern times large bodies of men did not take it. He instanced the Numidians and Egyptian priests in ancient times, more recently the North American Indians before they acquired European habits, the inhabitants of North Russia and Siberia, the Bedouins of Arabia, and others. Breast-fed infants obtained very little salt. The bulk of the common salt ingested by adults was added by the cook in the preparation of food for the table. Nearly all the common salt passed away from the body by the kidney. It was now admitted from the researches of Widal, Javal, and others, that when the kidneys were not healthy there was frequently considerable retention of common salt. Taken in excess it might prove harmful: (1) by throwing excessive work on the kidneys; (2) by increasing for many hours in the day the proportion of sodium salts in the fluids and tissues of the body; (3) by causing the retention of fluid in the body; and (4) by causing certain forms of diarrhœa, chronic bronchial and pharyngeal catarrh, and chronic skin diseases, when the kidneys were not able to excrete the salt ingested. Dr. Ackerley then considered the action of saline waters containing a small percentage of common salt, and contended that clinical evidence showed that hypotonic saline waters were not injurious in gouty conditions. This, he considered, was due to the fact that saline waters acted quite differently from salts added to and absorbed with food. He had no experience of hypertonic waters, but in the case of mixed mineral waters of low salinity like those at Llandrindod Wells he had failed to find any evidence that the gouty received anything but benefit from them.

Dr. ERNEST SOLLY (Harrogate) remarked that his own experience and that of his colleagues in Harrogate supported Dr. Ackerley's contention that an excess of salt absorbed was harmful, especially to the gouty, or to those whose eliminatory organs were at all defective. In administering the "strong sulphur water," which was very strongly charged with sodium chloride, it was always considered necessary to ensure free purgation even to the extent of frequently administering a "liver pill" over night, and all Harrogate practitioners were prepared to find trouble arising if the taking of the waters was not rapidly followed by free evacuation, the dehydrating action upon the blood and tissues being counteracted by the taking of a glass of one of the milder waters (whose salinity was about equal to "normal saline solution") during the forenoon, afternoon, or both.

The PRESIDENT, Dr. F. A. DE T. MOUILLOT, and Dr. G. E. HASLIP also took part in the discussion.

MEDICAL SOCIETY OF LONDON.

Hæmorrhage from an Unenlarged Uterus.—Removal of Part of Bladder Wall.

A MEETING of this society was held on Feb. 14th, Dr. SAMUEL WEST, the President, being in the chair.

Dr. VICTOR BONNEY read a paper on the Diagnosis and Treatment of Hæmorrhage from an Unenlarged Uterus, in the course of which he said that of the various drugs used for controlling uterine hæmorrhage ergot stood easily first. It was the only drug in the pharmacopœia of gynæcology the pharmaco-dynamics of which were accurately known. It was most efficacious in acid solution and combined with strychnine: ergot. liq. ♏30, liq. strychninæ ♏5, ac. hydrochlor. dil. ♏10. It might also be given as ergotin, but the solid preparations were not nearly so active as the solution. The beneficial effect of ergot on many forms of uterine hæmorrhage was undoubted, but it had been shown that its long-continued administration by producing arterial contraction threw an increased strain on the cardiac muscle. As the hearts of patients who had suffered from excessive uterine bleeding over a long period of time were often degenerate from the consequent anæmia, he would hold as axiomatic that rule: "Given a condition in which ergot if prescribed would have to be taken over a prolonged period then the use of the drug at all was contra-indicated." Hydrastis and hamamelis were sometimes useful adjuvants to the action of ergot or they might be successful when the latter had failed. He always gave them, like ergot, in acid solution and combined with strychnine. They did not give rise to the uterine contraction pain that sometimes caused patients to refuse to take ergot. Cannabin and hydrastinine were two active principles and in combination with ergotin sometimes gave satisfactory results. Dr. Bonney had used bryony and gossypiin and could speak well of the first, not so much from the point of hæmostasis, but because he found it did relieve certain forms of unexplainable pelvic pain. These were the drugs at their command. In what circumstances should they be used? In general, he thought it might be said that they were indicated when no gross pathological lesion was judged to be the cause of the bleeding. Their use where definite organic disease was present was more limited. In that connexion he thought ergot might beneficially affect a uterus congested from endometrial inflammation and in the slighter degrees of that disorder it might be given a trial before resorting to operative measures. If curettage became a necessity ergot was given with advantage during the convalescence from the operation. With regard to the use of styptic drugs in the treatment of uterine myomata he was of opinion that those tumours when giving rise to symptoms should be removed. Where, however, a patient declined operation ergot and its associated group of drugs would have to be employed. In all other cases of organic disease of the uterus operative measures and not drugs were indicated.

Dr. LEWERS read a paper on a case of Panhysterectomy for Carcinoma of the Body of the Uterus, in which an infiltrated portion of the bladder was removed.

OPHTHALMOLOGICAL SOCIETY.

Exhibition of Cases.

A CLINICAL meeting of this society was held on Feb. 10th, Mr. G. HARTRIDGE being in the chair.

Mr. J. B. LAWFORD showed a case of Optic Atrophy and Oculo-motor Palsy due to Intracranial New Growth. It was one of a small group of cases of pressure atrophy, with failure of vision, which began in the left eye, then came on in the other, resulting in complete blindness. There was no history of causation. X ray examination showed erosion of bone; the sella turcica was destroyed, and its cavity extended back to the basilar process of the occipital bone. There was now evidence of the extension of the neoplasm into the orbits and the nose; the patient had lost the sense of smell, his voice was nasal, and there was oculo-motor palsy. There was some headache, but no sickness. The growth must be in close contact with or near the pons. There was no gigantism or acromegaly, nor undue deposit of fat. Its nature might be sarcoma or endothelioma; he did not think it was gummatous, and the man had not derived benefit from antisyphilitic remedies. The only effect of thyroid extract was to reduce the rapidity of the pulse and faintness.—Mr. W. H. H. JESSOP reminded the society of two almost similar cases which he had had; one in a lady 52 years of age, whose symptoms started with some retro-bulbar neuritis; the other case in a young man aged 22 years.—Mr. R. W. DOYNE also mentioned a case in which the eye, which was blind, presented no affection of the disc. In the other eye optic neuritis was well marked.—Mr. LESLIE PATON said he saw Mr. Jessop's case before it was operated upon, and in a case on which Sir William Gowers lectured he (Mr. Paton) cut sections of the disc of both eyes and found a growth which pressed very definitely on one optic nerve. There was no neuritis in the eye which was blind, and vision in the other eye was 6/6. He said there was a possibility that the blindness in so-called optic neuritis was not due to any œdematous process in the nerve itself, but to a normal pressure atrophy.—Mr. LAWFORD, in reply, said that Mr. Jessop's cases did not seem to be median growths affecting both eyes.

Mr. LAWFORD showed a drawing of Episcleral Tubercle.—Mr. JESSOP commented on the rarity of such cases.

Mr. E. TREACHER COLLINS showed a case of Lenticonus Posterior with Opaque Membrane behind the Lens. He discussed the varieties of the condition, and expressed the

opinion that the present case was a congenital one. Behind the lens was an opaque membrane, and instead of taking the normal curvature it was depressed into a cone shape.

Dr. F. W. EDRIDGE-GREEN showed and demonstrated a New Form of Lantern for Testing Colour Perception, which had now been accepted by the Admiralty. It gave a brighter light than the others, and could be regulated to imitate signals at various distances.

Mr. N. BISHOP HARMAN showed cases from families with Hereditary Anterior and Posterior Cataract; also a Posterior Lens Defect (?) Lenticonus, and a case of Irido-cyclitis with Gross Keratitis Punctata, in which the reaction test by the Wassermann was positive.—Mr. HARTRIDGE, discussing the last-mentioned case, said but for that reaction anyone looking at it would have taken it for tubercle.—Mr. DOYNE, Mr. RAYNER BATTEN, Mr. TREACHER COLLINS, Mr. M. S. MAYOU, and Mr. C. S. BLAIR discussed the cases, the last-named protesting against the term "posterior lenticonus" being applied, as there was no projection of the posterior pole in the cases.

Mr. A. C. HUDSON showed an unusual form of Retinal Disease in a boy, aged 9 years, who had 6/6 vision, with full fields. When a month old the patient had a severe illness, in which he was unconscious, and two years later he had whooping-cough. In the eye there was some white mottling with white granular material, which seemed to be deep to the retinal vessels; it was chiefly in the macular region. He thought it likely that the condition was due to sub-retinal hæmorrhage.—Mr. ARNOLD LAWSON discussed the case, mentioning a boy with a similar condition in whom it was definitely due to hæmorrhage; nearly all the hæmorrhages were situated in the deeper layers of the retina, and in one or two instances the vessels seemed to be buried.

Mr. E. W. BREWERTON showed a case of Bilateral Parotitis and Cyclitis, which he believed to be due to some general toxæmia, though he had not been able to find the source of infection.—Mr. P. E. H. ADAMS (Oxford) said that in some cases of the condition which he had described he found the infection was from the mouth, the patients having pyorrhœa alveolaris. One patient was aged 20 years and the other 56 years, and in both cases there was keratitis punctata. The eye condition subsided simultaneously with the parotitis.

Mr. R. FOSTER MOORE showed a case of Hole in the Macula. The vision was 6/5.—Mr. M. L. HEPBURN discussed the case, remarking on the sharply cut circular margin in both eyes, and he expressed the view that the other eye was already in an earlier stage of the same condition. It might be in the nature of an infarct in the choroidal blood-supply. —Mr. J. H. FISHER thought it improbable that there would be an infarct in the identical pole in each eye.

Mr. LESLIE PATON showed a case of Connective Tissue Formation on the Disc, and raised the question whether it was congenital in nature. The history was indefinite, as the parents had only noticed a defect in sight three years before. —Mr. HARTRIDGE thought it was probably congenital, that it might have resulted from inflammation during intra-uterine life.—Mr. DOYNE reminded members of a case he showed in an active stage, throwing out greyish tissue towards the retina.—Mr. TREACHER COLLINS thought the cystic-looking body was due to distension of the sheath of the central hyaloid artery, and that the white mass on the inner side was some abnormal development of fibrous tissue in the vitreous, such as was found in congenitally defective eyes.

Mr. C. A. WORTH showed (per Mr. HARMAN) a case of Granuloma (?) of Conjunctiva.

Mr. R. E. BICKERTON showed an Electrical Method of Rotating a Testing Block in place of Cords.

Mr. J. H. TOMLINSON showed a new form of Gouge for Extracting Foreign Bodies.

Mr. LAWSON showed a Swelling around the Optic Disc of doubtful nature.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Fibroid Myoma.—The Teaching of Midwifery.

A MEETING of this section was held on Jan. 14th, Dr. HENRY JELLETT, the President, being in the chair.

Professor ALFRED J. SMITH exhibited specimens of Fibroid Myoma of the Entire Uterus and of Calcified Fibromyoma.

Dr. FREDERICK W. KIDD read a paper entitled "Some Hints and Suggestions on the Teaching of Midwifery and Gynæcology."

Professor SMITH said he had recently taken up an American journal, which, in indicating the correct course for a student to learn midwifery, did not indicate the method of Vienna or Berlin, but of Dublin. They should try to realise the importance which was attached to anything that went forth from the Dublin school, and therefore strive to keep up their standard. The great claim of the Dublin school was that it was essentially practical. The main trend of midwifery examination was to educate the sense of touch so that they could realise the factors present in a case. They had in Dublin ample opportunities in the big maternities for such education. He was an advocate of the three months' system, but it must be a full three months. He believed in a clinical examination in gynæcology, but he did not think they would get much farther forward by a clinical examination in midwifery. Gynæcology and midwifery should not be taught together, but in separate three months' courses.

Dr. RICHARD D. PUREFOY said that the practice of note-taking by students had not been developed as it should be. The accurate description of a case which would give a realistic picture of the main features of a case to a person who had not seen it was very often a matter of considerable difficulty. He thought the change to three months was most unfortunate, as it might lead students to estimate the importance of the subject by the time given to the study, and would make it practically impossible to provide the necessary material for enabling students to qualify for a certificate. He was strongly of opinion that the clinical examination in midwifery would be improved. The more the students practised palpation and educated the sense of touch, the more advantage they would derive in other departments of their profession.

Dr. A. DEMPSEY said that note-taking in a certain number of cases ought to be made obligatory. Even without its being compulsory students could be got to take notes much better if the physicians in charge would show more attention to the notes that had been taken. He thought that the fact that classes would be smaller in a three months' course, and that students would, therefore, have greater opportunities for becoming acquainted with the work, was a point in favour of the short course.

The PRESIDENT said that the reputation of the Dublin school was one of the greatest in Europe, but some things in connexion with it required stringent treatment. Professor Smith did not really want to alter the period of midwifery and gynæcological training to three months, but to make it two periods of three months each. The suggestion permitted the student to make use of the very large amount of material to be found in general hospitals, and it increased his opportunities of acquiring a practical knowledge of gynæcology. The difficulty was how to combine general and special hospital work in a single course. They were unanimous as to lectures preceding practice; but if a man who did not satisfy his examiner had to be put back his whole course would be impeded. He thought that in the teaching of gynæcology diagnosis should come first; it was the most important thing for a general practitioner with limited opportunities. Next to diagnosis came the indications for treatment, and the teaching of the treatment itself came last of all, as there were few gynæcological conditions that could be treated satisfactorily in general practice.

Dr. MICHAEL J. GIBSON, Dr. BETHEL SOLOMONS, Dr. WM. PEARSON, and Dr. J. SPENCER SHEILL also spoke.

LIVERPOOL MEDICAL INSTITUTION.—A pathological meeting of this society was held on Feb. 3rd, Dr. Thomas R. Bradshaw, the President, being in the chair.—Mr. George P. Newbolt and Dr. D. M. Alexander showed two cases of Pylorectomy for Carcinoma of the Pylorus; in the one the growth was colloid, while in the other it started at the edge of a deep ulcer.—Mr. W. Thelwall Thomas and Dr. William W. Mackarell showed specimens of: (1) Adenoma of the Breast removed from a patient aged 27 years, with "colloid" degeneration of the intracystic growths; (2) Chondro-sarcoma of the Femur from a girl aged 17 years, which had commenced in the internal condyle and contained giant and spindle cells and much cartilage; and (3) a section of Undescended Testicle to demonstrate the atrophic character of the epithelium and to emphasise the need for the removal of such structures.—Mr. F. A. G. Jeans showed the Wall of an Old Hydrocele which closely resembled a

giant-celled sarcoma.—Mr. Frank T. Paul showed a Malignant Tumour growing from an improperly removed sebaceous cyst in a man aged 43 years.—Dr. R. J. M. Buchanan read a note on Syphilis of the Heart. After classifying the clinical varieties of cardiac syphilis, he said that valvular lesions with their accompanying murmurs were the least important feature, and that alterations in rhythm, anginal attacks, and toneless sounds were more often present, these with signs of alteration in size. When there was a history of syphilis in cases of heart disease anti-syphilitic treatment should be pushed to the limit of tolerance, accompanied by the ordinary measures for combating heart failure. Even albuminuria and dropsy were no contra-indication to the use of mercury. An illustrative case was described in which at the necropsy the heart was found to weigh 2½ pounds; there were no murmurs and the sounds were so distant and fœtal in character as to justify the term "silent or whispering heart." The patient died suddenly. The heart was studded with gummata, one of which encircled the right auriculo-ventricular orifice; all the valves were healthy; the endocardium and pericardium were much affected and there were marked myocarditis and endoarteritis, but the orifices of the coronary vessels were free. There were no other signs of visceral syphilis, but there were old nodes on the tibiæ.—The President said that in his experience the commonest seat of syphilitic lesions of the heart was the aortic valves. He thought that the danger of the use of mercury had been exaggerated; in fact, he had known chronic albuminuria to disappear under its administration.—Dr. J. Hill Abram said that he could not accept the view that the "silent heart" meant a syphilitic lesion; this simply indicated muscular weakness. Mercury was extremely useful in cases with a definite rheumatic causation, and not only in syphilitic lesions of the heart, but when definite signs of nephritis were present he thought that mercury was contra-indicated.——A general meeting of the society was held on Feb. 10th, the President being in the chair.—Dr. Thomas Bushby read notes of two cases of Prostration following Seasickness. The prostrate condition persisted after landing; in both cases acetone and diacetic acid were present in the urine. Treatment was directed to the relief of the acetonæmia and speedy recovery followed. Dr. Bushby suggested that if the acetone bodies could be credited with a share in the causation of continued prostration and nausea in cases such as he had related it was also probable that they might play an important rôle in the etiology of prolonged sea-sickness.—Mr. Colin Campbell related the case of a man, aged 21 years, suffering from Bronchiectasis and treated by the intratracheal method. Difficulties in the way of treatment were that the patient had subluxation of the jaw and was tongue-tied. He also suffered from vomiting of a dense ropy mucus caused by swallowing putrid sputum. Treatment was commenced in November, 1908, and from then till now he had had 4 ounces of a 10 per cent. solution of izal in glycerine. For the past four months there had been no fœtor. The discharge had diminished from 30 ounces daily to a dozen small expectorations. The chest expansion had increased from 1 to 3 inches, and he could now run 600 yards in two minutes. A cast of the hand showing osteo-arthropathy and a radiogram of the lungs were exhibited.—Sir James Barr spoke from personal observation of the efficiency with which Mr. Campbell carried out this special form of treatment.—Mr. F. T. Paul reported two cases of Malignant Stricture of the Ileum in men, aged 63 and 58 years respectively. The first was too advanced for excision, and the bowel was short-circuited. The second was excised and the bowel was joined end to end; both recovered well. The growth was a small-celled carcinoma.—Mr. Paul also described three cases of Villous Tumours of the Bladder. He advocated early and thorough operation for these cases and referred to the necessity of subsequent cystoscopic examination to watch for possible recurrence which should be dealt with promptly.—Dr. Henry Briggs reported the completely successful treatment of a Villous Growth of the Bladder in a spinster, aged 68 years, by suprapubic cystotomy and excision of the growth; the patient lived nine years after the operation and died from cerebral apoplexy. Under the base of the tumour three-eighths of an inch of the ureter were removed in the bladder wall.—Dr. Briggs also exhibited an Extensive Villous Growth treated by removal of the whole bladder per vaginam and the implantation of the ureters in the vaginal roof. The patient, who was 58 years of age, lived for 22 months and died from "surgical kidneys." Dr. Briggs was doubtful if this treatment was to be commended.—Mr. George P. Newbolt said that he had treated several cases in the advanced stages of the disease, and in one instance had removed eight ounces of growth from the bladder. This gave relief for some years, but the patient died from hæmorrhage.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.—A meeting of this society was held on Jan. 14th, Professor Robert Muir, the President, being in the chair.—Professor Noel Paton delivered an address entitled "The Significance of Certain Changes in the Composition of the Urine." He said that when abnormal constituents such as sugar and albumin made their appearance in the urine their significance was fully recognised by the physician, but that the meaning of quantitative changes in the normal constituents was not yet properly appreciated. He then proceeded to consider these changes, especially alterations in the distribution of the nitrogen in the urine. The urinary nitrogen, derived as it was from the protein of the food and body, was normally distributed as follows: about 90 per cent. in urea, 4 per cent. in ammonia compounds, 4 per cent. in creatin and creatinin, and 2 per cent. in the purin bodies (uric acid, &c.). As to the mode of formation of these nitrogenous bodies from the protein, experiment showed that protein subjected to the action of a mineral acid could be broken down into various substances which differed according to the method of breaking down employed. In the analogous breaking down of protein in the body the first step was denitrisation; ammonia was split off and went to form ammonia salts. These dehydrated in the liver and the resulting product was urea. Most of the nitrogen of the protein went to form mon-amino acids, but di-amino acids were also formed. The arginin compounds were denitrified, forming ammonium carbonate, which was dehydrated to form urea. Creatin in muscle, on the other hand, was dehydrated to form creatinin, which appeared as such in the urine. The purin bodies were derived (1) in muscle as xanthin, (2) from nucleins as amino compounds such as adenin. Professor Paton discussed the conversion of these bodies into uric acid and the further fate of that substance. The fate of the benzene compounds was considered specially in relation to alkaptonuria and to their combination with sulphur, and the appearance of non-oxidised sulphur in cystine was explained.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 2nd, Dr. Adam Fulton, the President, being in the chair.—Dr. William Tibbles read a paper entitled "The Bacterial Disturbances of Digestion and the Consequences thereof." He first sketched the normal process of digestion and showed how carbohydrates were converted into dextrose, lævulose, and galactose, fats into fatty acids and soaps, and proteins into amino-acids, the latter being reconverted in the intestinal mucous membrane into proteins. He said that bacteria played a great part in digestion, breaking down complex bodies into simpler substances; putrefactive organisms split proteins into amino-acids, aromatic bodies, purin bodies, ptomaines, and ammonia compounds. Many of these set up a train of morbid symptoms and ultimately organic disease, and it was chiefly due to antagonism of these poisons that auto-intoxication was not constantly present. In disease bacteria in the alimentary canal produced (1) gases and acids and (2) alkaloids, the first causing flatulence and acidity, and the second auto-intoxication. In treating flatulence and acidity all carbohydrates should be withheld for two or three days, meat and vegetables being given. Rice, sago, tapioca, and arrow-root, with stewed fruit should then be gradually added, and finally bread and potatoes. The best medicine was a mixture containing hydrochloric acid to promote the formation of gastric juice. The chief considerations in treating bacterial disturbances of digestion were: (1) that the food should be free from undesirable organisms; (2) that it should not favour bacterial action; (3) that it should be moderate in quantity, especially as regards animal food; and (4) that the carbohydrates should be cut down. Drug treatment consisted in the use of aperients, cholagogues, and intestinal antiseptics, and sour milk should be added to the diet.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 3rd, Mr. G. Morgan being in the chair.—Dr. Charles F. Bailey showed a case of Capillary Nævus of the Forehead in an Infant treated by refrigeration with solid carbon dioxide. He also showed a woman with progressive muscular atrophy, whose hand movements were distinctly benefited after treatment by potassium iodide and high-frequency currents.—Dr. Walter Broadbent showed a case of Stokes-Adams Disease. The symptoms included a pulse-rate of about 30 and syncopal attacks. In tracings from the veins of the neck the auricular waves were quite independent of the ventricular waves, and were more than twice as numerous, being 70 to the minute.—Mr. H. N. Fletcher read a paper on Ectopic Gestation, referring especially to its early occurrence in the tube. Stress was laid on the fact that the ovum was primarily intramural, and that when rupture occurred it was either inwards into the lumen of its tube or outwards into the peritoneal cavity or broad ligament. He pointed out that the former was the most frequent ending of pregnancy in the wide ampullary portion of the tube, and the latter almost the rule in the narrower isthmic and interstitial portions. Out of 25 cases on which the paper was based, 16 were cases of tubal abortion, 6 of them "complete," i.e., with the extrusion of the entire ovum through the ostium abdominale into the peritoneal cavity, and 10 were "incomplete," i.e., with the whole or a portion of the ovum retained in the tube. Rupture was nearly always early. In 13 out of 16 it was at five weeks or under. Of the 9 cases of rupture outwards, 5 were into the peritoneal cavity, and 4 into the broad ligament. There were no fatalities in the series.

Reviews and Notices of Books.

Modern Problems in Psychiatry. By ERNESTO LUGARO. Translated by DAVID ORR, M.D. Edin., and R. G. ROWS, M.D. Lond. With a Foreword by T. S. CLOUSTON, M.D. Edin., LL.D. Manchester: At the University Press. 1909. Pp. 305. Price 7*s.* 6*d.*

THE task of the investigating scientist becomes increasingly difficult. The more research work that is done the greater is the need for the verification of that which has already been recorded, and the plane upon which any given piece of work is carried on depends upon an investigation into the security of the planes below. The investigator is therefore at the outset confronted with problems which are in many instances off the immediate line of his work, and for the solution of which he is fitted neither by temperament nor by training. To these problems he may well, through ignorance, devote a disproportionate amount of attention, sometimes too much and sometimes too little. Indeed, there is considerable danger that the more complex problems may apparently be approached along a path paved with bed-rock facts which a succeeding generation recognises as no path at all, but as a dangerous area of shifting sands. The study of the literature of a generation or two back shows this to demonstration. So vast has become the range of human effort that only a most exceptional intellect can grasp the value of a few of the problems that confront us and can coördinate from the various sciences the facts which bear upon some particular inquiry. In no branch of science are these difficulties perhaps more clear than in psychiatry. The study of mental disease involves the most intricate problems, chemical, physical, anatomical, physiological, medical, and sociological, while it involves further a certain knowledge of the humanities, without which our Science becomes sterile at the point where our Art begins. Professor Lugaro with truth points out that the alienist must, so far as in him lies, take an active part in work developing in neighbouring fields of research in order to further progress in his own. This justifies the many-sided activity which young alienists display at the present time, and which carries with it sometimes the reproach of studying everything except psychiatry, of analysing everything save the patient. On the other hand, our author points to the danger which lurks in certain forms of research. Researches into the chemical modifications of the urine, of the blood, or into the alterations in material exchange have provided us with an abundant literature, but many works of this sort are truly documents of sesquipedalian ignorance. The complexity of the questions which are being investigated, the uncertainty of the clinical criteria, the difficulties of the special technique, and the lack of the necessary technical skill on the part of the observers have led to but few conclusions of any value. Much of the work must be done again.

Professor Lugaro does not, in the present treatise, set himself to give a full exposition of the state of modern psychiatry, but rather attempts, to use his own words, to point out the practical programme for the tasks of to-day and to give some hint regarding the programme of to-morrow. With this view his book contains special chapters upon the problems of psychology, of the anatomy of the nervous system, and of pathogenesis, etiology, and nosology, as well as upon such practical matters as treatment and prophylaxis. Each chapter forms a brief abstract of such knowledge as we possess, together with suggestions as to the lines upon which research might be most advantageously prosecuted. In the chapter upon Psychological Problems the author deals with the conception of determinism, psycho-physical parallelism, and with the theories of current metaphysics. He rejects as illusory traditional solutions such as those of *materialistic monism*, *idealistic monism*, *dualism*, or *scepticism*, and, indeed, denies the legitimacy of the metaphysical problem altogether. His position is that philosophy, extricating itself from the vicious circle of metaphysical doctrines, should aim at developing the conception of a pure realism. This realism, which is based on experience and refuses to acknowledge metaphysics, neither can nor should differ essentially from the primitive realism which is common to man and to the higher animals, and which is the spontaneous product of the normal development of intelligence—a realism rendered more and more intelligible and more profound by a minute analysis of psychic processes, more perfect by a criticism based on knowledge and its mechanism, and carried to a greater precision in its practical conclusions by being made to depend upon a greater number of experiences. According to this realism experience coincides with consciousness, and the existence of a reality outside consciousness is a pure hypothesis. But it is the most legitimate of all hypotheses, because there is no experience which does not support it, and there is none which contradicts it. Moreover, it is a necessary hypothesis, and its application is as universal as the products of experience are constant. It, therefore, not only imposes itself on consciousness, but its negation is inconceivable. It may be said that this is, after all, a metaphysical hypothesis because it recognises a hypothetical reality outside experience. Nevertheless, it does not seek to penetrate into the intrinsic nature of this reality; to accomplish this is the brave aspiration of the metaphysical hypotheses which are examined and rejected. Psycho-physical parallelism must be regarded as a simple result of experience and not as a principle which necessarily implies adhesion to metaphysical doctrines.

In the chapter on the Problems of Anatomy it is shown how, on the one hand, psychiatry requires normal anatomical data, without which neither the normal nor the pathological mechanism of psychic phenomena can be made clear, and, on the other hand, it demands objective demonstration of the changes in nutrition which affect the nerve elements and which depend on causes analogous to those usually injurious

to the integrity of any other organ. Modern pathology has revealed that connective tissues possess much more important functions than the name would tend to imply. In the chemical interchange of the normal organism, in defence against external and internal toxins and micro-organisms, the connective elements perform functions of the highest importance. The hypothesis that the rôle of neuroglia is merely passive is evidently defective. Etiological problems in psychiatry are likely to form a promising field for research, but one scarcely yet occupied, so arduous are the inquiries to be faced. The causes of mental disease do not apparently essentially differ from the causes of other diseases, but the connexion between the morbid cause and the cerebral lesion is very difficult to trace because of the complexity of the mechanism by which it reaches the brain. In the past too much importance has been attached to the so-called psychic causes, but more recently the internal factor has been so much exaggerated that it has appeared as though the external cause was simply an incident which revealed a fatal predestination. If our observations are extended so as to include not only the patient's organisation but also the organisations of his ancestors, it would appear that an anomaly is the result of the marked effects produced by an external cause which has acted on it directly or through the organism of a progenitor during development.

On the vexed question of dementia præcox Professor Lugaro suggests that under this term is included a collection of closely allied psychopathic syndromes based on very similar anatomical changes; that it depends on systemic and selective lesions of cortical neurons, which, however, do not absolutely correspond either in extent or degree; and that the predisposition is not of the same importance in all cases, and often requires the coöperation of endogenous and exogenous causes of different nature and efficacy.

Professor Lugaro is to be congratulated upon the masterly and judicious survey of his subject which he has given to the world in this work. Not only have we a succinct and clear exposition of the present state of our knowledge, but we are confronted with a tale of the inexhaustible work that lies before us. The efforts of the individual worker or generation of workers seem to count for nothing when that which has been done is compared with that which there is yet to do. Our author remains, nevertheless, confident that while the joy of research will be without end, research itself will have no other aim than to constantly go on increasing that complex of positive ideas by means of which man, more and more every day, asserts his dominion over nature.

The translation appears to us to be well done and there is but little internal evidence that the work was not originally in English.

The Family and the Nation: A Study in Natural Inheritance and Social Responsibility. By WILLIAM C. DAMPIER WHETHAM and CATHERINE DURNING WHETHAM. London: Longmans, Green, and Co. 1909. Price 7*s.* 6*d.* net.

AMONG the words of Jesus, the son of Sirach, we find, "Desire not a multitude of unprofitable children, for from one that hath understanding shall a city be peopled." The lesson of this book is that our cities are being peopled from the unprofitable.

The study of heredity is difficult; it demands a certain mathematical quality of mind, a knowledge of biology, and some acquaintance with psychology, while its literature has, alas, been overlaid with technical verbiage and far-fetched phrases. "The Family and the Nation" presents a broad, and yet concise, summary of modern thought and work on this subject, which is sound, judicial, and yet easy of perusal. Such an exposition is at this moment of the highest value, for there exists to-day a disquieting tendency on the part of social reformers and doctrinaire political leaders to revert to views upon the equality of mankind inculcated by the encyclopædists and perpetuated by the individualists of the later nineteenth century, though opposed to the developments of psychology. The platform orator is fond of assuring modern audiences that all infants are of equal value if they were given equal chances in life. It is not true: ability is hereditary as surely as wealth often is, though in neither case can the great influence of environment be denied or belittled. The scientific study of heredity is only just beginning: the scientific breeder of animals has only been at work for a century. The patient labours of Mendel have only been dragged into daylight in the last few years, and Galton's great work, which proves the transmission of ability, lay for 40 years unnoticed. The examination of the influences tending to favour the growth of the more suitable strains of the human race has been exalted by Sir Francis Galton into a real science. In the laboratory bearing Galton's name Professor Karl Pearson and his assistants are laying down stores for the study of mankind from this point of view, and from no class in our social scheme could more material aid be obtained than from practitioners of medicine, who are now gaining a ground knowledge of the subject and who, in time soon to come, will acquire the complete familiarity necessitated by the demands of other official duties.

In no other university yet save that of London is there any systematic provision for the study of heredity, though in Cambridge, as this valuable book abundantly shows, important lines of thought have been followed under the direction of Professor Bateson, Professor Punnett, and others. Between Mendel with his simple mathematical conception of heredity and Galton the statistician there is a wide range of writers, each with his own field and point of view. To collate Darwin, Mendel, Galton, Weismann, Nägeli, and de Vries is no easy task, but if we are to gain any conception of the problem of variation in man it is essential to grasp the simpler problem as presented in plants and lower animals: Mendel's peas, Biffen's wheat, Bateson's Andalusian fowls, Professor Cossar Ewart's zebras, all provide their quota of evidence. This multifold influence of variation and heredity is dissected with great skill in the volume before us. The analysis leads to an excellent understanding of Sir Francis Galton's work, and to a complete acquiescence in the irrefutable arguments in proof of the inheritance of ability. Galton has taken nearly all his evidence from modern periods; he has traced the relations of all the judges of England for two centuries; has sifted the peerage; followed the families of the statesmen of the eighteenth century; and cited through many chapters the origin, descendants, and collaterals of painters, poets, soldiers, divines, and men of science. There were years of patient labour, and much close and careful reasoning is required before he reached the final chapter of hereditary genius which deals with its generalisation, the influences which affect the natural ability of nations. Here Mr. and Mrs. Whetham pick up Galton's thread and lead us into new ground, the birth-rate of the civilised nations of to-day.

The birth-rate shows that the average number of children in the great mass of the more successful part of the nation has fallen below one-half its value of 40 years ago. "The landed gentry, the more eminent of official, professional and commercial classes show the same result, while it extends equally to the thrifty and provident skilled artizans." It has persistently been claimed that love of ease and pleasure is the motive which leaves the cradle empty, but the more prosperous, provident artizans have never shown any objection to "Scorn delights and live laborious days." None the less the birth-rate of the country has dropped,

and this national loss is a graver one than some even thoughtful people perceive, though the solatium to industrious fathers of families, offered as a rebate under Schedule D in the Budget still before Parliament, indicates that the seriousness of the matter has attracted the notice of the Chancellor of the Exchequer. But if the failure in offspring of the upper working classes is a subject of disquietude the same reduction in the ranks of the intellectual workers is of far greater moment. Skilled artisans can be evolved in one generation, but the data afforded by Mr. and Mrs. Whetham go to show that the loss which has been already incurred by the nation in hereditary intellectual output is irreparable for a century at least. The mental ability of some men, in the mathematical estimation of certain Cambridge *savants*, must be reckoned as a hundred times the average, and if this element of a people dies down in numbers more than the rest it will soon cease to exercise a dominant influence on the whole. It is common knowledge that in all civilised European countries the relative birth-rate has steadily diminished in proportion to the population. In England, France, and Belgium the ebb began about 1875, in Germany about 1890 or 1895, but even now the relative birth-rates of Germany and Great Britain are 33 and 26 per 1000. In all countries the restriction of births affects first the more intellectual sections of the nation, but the returns of birth among the members of the leading friendly societies, as sifted by Mr. Sidney Webb, show that the rate of reproduction among the higher artisans, the aristocracy of labour, has declined by more than half in 23 years. If to this be added that some of our defectives are relatively extremely fertile, the danger to the State will be seen to be increasing in a ratio far greater than that of arithmetical progression. With an almost stationary population "one generation of the more successful classes has halved in number, while the unsuccessful have continued to increase. The relative burden of incompetence carried by the nation is heavier, and judged by the returns of pauperism and insanity, tends to increase yet more." This is the statement of Mr. and Mrs. Whetham, and to a great extent it cannot be resisted.

As to remedy, we find little of hope in the volume before us. Hints as to the education of public opinion, suggested legislation for the segregation of the feeble-minded, appear to sum up the weapons before us. There is a great despair about the authors' final chapter. We have destroyed natural selection of the old sort, red in tooth and claw. There is no doubt of it, and medicine must accept a large responsibility. It is not our duty to offer attempts at a solution of a problem which concerns the constructive politician. He must probably be allowed time for his problem. The views of these authors will not meet with acceptance in some political quarters, but they are the expressions of the scientific economist, rather than the party politician. On p. 194 they say: "The rearing and education of children, in a fashion appropriate to the positions they are capable of occupying, is a matter of primary importance to the State at all times, and particularly at the present day. The cost rises rapidly with the importance and responsibilities of the careers for which the children are fitted." In the matter of education there is none which is longer or more costly than our own, the career of medicine. The authors continue: "As far as expense is responsible for the declining birth-rate of the best stocks it is certain that exemption from income-tax of all moneys spent in any rank of life on the maintenance and education of children would in the end greatly benefit the one real source of national credit, the composition and character of the life of the people. It would be well, too, that the graduation of death-duties should be transferred to the taxes on legacies. It is the amount a man receives, not the sum his father leaves, that should be taken as the basis. A fortune divided among ten children should be taxed less than one that goes to an only son or daughter."

All the more civilised countries of Europe, excepting England, are provided by their Governments with machinery which furnishes at the cheapest rates the opportunities for technical training in the higher branches of intellectual knowledge. England has little, almost no such machinery. We are dependent upon the accumulated property of the intellectual classes as a national fund from which reserves of intellectual power are in each generation to be drawn. Until some such national provision as other countries possess is made, and, indeed, for at least a generation after such provision is made on a scale good in form and adequate for our requirements, the infertility of the more intellectual classes is a great source of risk. Taxation which falls unduly on those classes may provide a bare existence for the least effective types, enabling them to multiply in unrestrained numbers, and so to inflict upon the nation an error of development from which it will take centuries to recover.

Even if our readers do not all see eye to eye with Mr. and Mrs. Whetham, particularly on the points of contact of their subject with practical politics, we think that they will find in this volume a valuable and trustworthy guide to an important and interesting branch of thought, one of especial interest to the members of our profession.

Tuberculosis. A Treatise by American Authors on its Etiology, Pathology, Frequency, Semeiology, Diagnosis, Prognosis, Prevention, and Treatment. Edited by ARNOLD C. KLEBS, M.D. Illustrated. London: D. Appleton and Co. 1909. Pp. 939. Price 25*s.*

THE editor states in his preface that a continuous and systematic discussion of the whole subject of tuberculosis, in all those phases of interest and value to the practitioner, by a single author has become an impossibility. In view of the enormous literature—nearly 3000 publications of 1908 alone have been collected in Dr. Klebs's office—the task of sifting the important from the unimportant could only be undertaken by those able to devote much time exclusively to one distinct phase; therefore several authorities were invited to take part in producing this volume. Each chapter deals with a distinct part of the subject, and is written by an author whose particular familiarity with the subject-matter is well recognised. Although the fullest attention had been paid to the fundamental work done in other countries, it is but natural that in an American treatise a full consideration is afforded to work carried out in that country. The completeness with which the work has been performed is indicated by the "addenda" at the end of some of the chapters, containing a summary of the principal communications presented at the International Congress on Tuberculosis held at Washington in 1908.

A full account of the tubercle bacillus is given by Dr. M. P. Ravenel (Madison, Wisconsin). The modes of invasion are discussed at length, and stress is laid upon the evidence now at hand, and constantly accumulating, in regard to infection by means of the alimentary tract. It is rightly pointed out that in children especially it occupies a position almost, if not quite, as important as respiratory infection. Dr. Ravenel remarks that it must not be understood that the source of such infection is always food. He thinks that dust which reaches the upper air-passages and mouth is constantly swallowed with the saliva and nasal secretion, and so bacilli may enter in this way. The frequency with which the bovine tubercle bacillus has been found in children shows, however, that food is often responsible for the infection. The possible infection of food and drink by tuberculous persons is not

touched upon, and such a source of possible danger has scarcely received the attention which it merits.

The morbid anatomy of tuberculosis, more particularly of the pulmonary variety, is considered by Dr. Ludvig Hektoen (Chicago). He draws attention to "fibroid, quiescent, and healed tuberculosis of the lungs," and remarks that anatomically areas of healed tuberculosis most often appear as slaty indurations, usually apical and subpleural, flat or nodular, and inclosing small calcareous masses, fibroid tubercles perhaps being present in the adjacent tissue. He mentions, however, that mere slaty indurations are not sure signs of healed tubercle, as they may arise from inhaled dust, in the healing of infarcts, and after non-tuberculous pneumonia. Dr. E. R. Baldwin (Saranac) is responsible for a contribution on Resistance, Predisposition, and Immunity. The subject of immunity is carefully analysed, and attention is particularly drawn to the leucocytes and lymphoid tissue as being subject to changes during the "immunisation" process, by which a more vigorous defence is presented to invading bacilli. He concludes his remarks with the following summary: "The biologic processes of specific immunity against tuberculosis are at least twofold: (*a*) a bacteriolytic function, involving in all probability agglutinating and opsonifying action by the serum; (*b*) a toxin-binding or digesting function which establishes tolerance after a period of susceptibility, provided the amount is correctly adjusted to the capacity of the individual's cells and their nutrition is well maintained."

The Frequency of Tuberculosis is discussed by Dr. A. C. Klebs (Chicago). He is of opinion that amongst the white races it is difficult to come to a final decision as regards the frequency of the disease either during life or after death. The proof of its presence after death has been differently laid down by various observers, and the occurrence during life is often difficult to establish. However, if von Pirquet's cutaneous reaction is accepted as being specific, the vast majority of individuals have at some time been affected. Dr. T. D. Coleman (Augusta) quotes some interesting statistics as to the incidence of the disease among the dark-skinned races of America, and points out its appalling frequency. For instance, the United States census for 1900 gives the death-rate of 239 per 100,000 living Japanese, as compared with 173 in the white population.

The Symptomatology and Diagnosis of Pulmonary Tuberculosis are excellently described by Dr. C. L. Minor (Asheville). In clear language he explains the various means of ordinary physical examination and also the accessory methods (sputum examination, tuberculin, and so on). The different symptoms are considered in detail, and numerous hints are given which will be found useful by the practitioner. The importance of Prophylaxis of Tubercle is ably considered by Dr. Hermann M. Biggs (New York City). He first deals with individual prophylaxis, and lays down some sound principles as to the management of the general life of children, and the measures which should be adopted in the care of tuberculous individuals. He makes some interesting remarks on the compulsory notification of tuberculosis and on the work of the "health department" in relation thereto. This portion of the work is well worthy of study, but the subject is treated in such detail that a summary would be of but little value. It forms one of the most complete accounts of the compulsory notification of this disease in actual practice which we have yet received.

A large portion of the volume is very properly devoted to the Treatment of Tuberculosis. Dr. Lawrason Brown (Saranac) discusses the specific treatment by tuberculin. He describes the varieties of tuberculin used clinically and the methods of administration. He sums up his opinion thus: "Tuberculin when properly given does no harm, may produce no apparent result, and may markedly benefit an individual patient, who can follow at the same time hygienic-dietetic treatment while in a health resort, at home and at rest, or at work. Small doses and careful increase are most important, and by following them very closely some patients, even in advanced stages, reap great benefit." This article was apparently written before the introduction of the opsonic index as a guide to the use of tuberculin, but in an addendum the value of the index is considered and criticised. Dr. G. B. Webb (Colorado Springs) contributes a short article on the specific therapeutics of mixed and concomitant infections; his results have been encouraging. Hygiene, diet, and open air in the treatment of tuberculosis are discussed by Dr. T. D. Coleman, and interesting information is given in regard to the American sanatoriums. An account of climatic treatment is given by Dr. H. Sewall (Denver).

The part of the work dealing with Surgical Tuberculosis is divided into seven chapters. They are as follows: Tuberculosis of the Lymph Glands, by Dr. Leonard Freeman (Denver); Tuberculosis of Bones and Joints, by Dr. L. L. McArthur (Chicago); Tuberculosis of Muscles and Fasciæ, by Dr. Freeman; Tuberculosis of the Brain and its Membranes, by Dr. McArthur; Intestinal Tuberculosis and Tuberculosis of the Peritoneum, by the same author; and Tuberculous Ischio-rectal Abscess and Anal Fistula, by Dr. Freeman. All these chapters contain much interesting information, and complete an excellent treatise, embodying the most recent advances made in the study of tuberculosis in the United States, with due references to the work done in other countries on the same lines. The book is well printed on good paper, and the illustrations are beautifully reproduced. We can cordially recommend it to those of our readers who wish for a good work of reference on tuberculosis.

LIBRARY TABLE.

Clinical Memoranda for General Practitioners. By ALEX. THEODORE BRAND, M.D., C.M. Aberd., and JOHN ROBERT KEITH, M.D., C.M. Aberd. London: Baillière, Tindall, and Cox. 1909. Pp. 207. Price 3*s.* 6*d.* net.—This is a small handbook designed to be of service to general practitioners and to help especially the junior commencing practice. The subject matter, though mainly original in form, has been carefully selected and compiled by the authors from medical works and journals, both British and foreign, in odd moments during a busy professional life, and the results of their personal experience have been embodied. Those for whom the notes are intended are presumed to be well acquainted with the general principles of their profession and to be possessed of standard text-books for reference, hence only those points are referred to which the authors hope, recollecting their own experiences, may be found helpful to others in the treatment of perplexing and atypical cases. The work is divided into five sections—medical, surgical, obstetrical and gynæcological, therapeutical, and "aphorisms"—and in every section the audience to whom the book is addressed will find valuable information and suggestions. The type is good and the index shows careful preparation.

A Handbook of Venereal Diseases. Being an Outline of these Affections and of their History and Treatment. By A. C. MAGIAN, M.D., B.Ch. Vict., Ancien élève de l'Hôpital St. Louis, Paris. Manchester: John Heywood, Limited. 1909. Pp. 159. Price 3*s.* 6*d.* net.—This small handbook is interesting and instructive. The histories of cases of gonorrhœa and syphilis are well put together and clearly expressed. The author also gives his opinions forcibly—but not too much so—upon the question of marriage of patients

suffering from either of the two diseases, and quotes disastrous cases of those who have married against the advice of their medical attendants. The book is specially valuable in that it mentions nearly every known drug, metal, and salts of the metals which have been recommended for the cure of venereal disease in its various forms, but as regards treatment, the reader may be disappointed by the fact that nothing new is recommended. We would point out that this is not necessarily a fault and may be a virtue in a book which certainly deserves a place in every medical practitioner's library. The type is good, but there are some printer's errors. The index has been carefully made.

Home Nursing. With Notes on the Preservation of Health. By ISABEL MACDONALD, Cert. Roy. Inf. Edin., M.R.B.N.A., A.R. San. I., Lecturer on Nursing and Hygiene to the County Committees of Fife and Haddington, to the County Councils of Stirling and Kinross, and to the Carnegie Dunfermline Trust; late Lecturer on Home Nursing, Scottish National Exhibition, 1908. Illustrated. London: Macmillan and Co. 1909. Pp. 326. Price 2*s.* 6*d.*—This is a sound little book. It is in no way technical and is thus well suited for the family circle. As a rule, the woman who buys a medical book and proceeds to prescribe for herself usually "gets a fool for a patient," as is aptly pointed out in the preface of this work, but the danger thus indicated has been on the whole avoided. The chapters dealing with the observation of the sick and the care of patients are particularly to be commended. The sections dealing with the administration of enemata, the preparation of special baths, contain some debateable points, and the "food table for a healthy infant" would receive some remodelling from many physicians. Chapter XVII. contains much valuable and important matter connected with the "care of the dead," which is not much touched on in works connected with the surroundings of the sick-room, and the writer must be highly commended in her handling of this delicate subject. The book is well printed and free from clerical errors, but as it is intended for "reference in time of need" by non-professional readers, and not for "consecutive perusal," it is specially to be regretted that there is no index provided.

The Recognition of Minerals. By C. G. MOOR, M.A., F.I.C. With Monographs on Geology, Ore Deposits, &c., by DONALD A. MACALISTER, Assoc. R.S.M., F.G.S. London: *The Mining Journal.* Pp. 231. Price 7*s.* 6*d.* net.—In this work Mr. Moor has provided what will prove to many a new and most interesting, if not lucrative, recreation. "It is specially intended," he writes, "for persons who do not possess an intimate knowledge of minerals, but who may be travelling or residing in districts where mineral wealth exists." The book is therefore addressed, not exclusively to those engaged in the mining industry, but to those who take a practical interest in discovering for themselves what the minerals are which may lie at their feet in the districts in which they may happen to be, and the quest might well form an agreeable one for any man possessing some scientific knowledge when away upon a holiday. The instructions seem to us to be clear and practical. The reader or "prospector" *in posse* is warned first of all that, generally speaking, certain minerals are usually associated with certain geological formations, so that it would be idle to look for a mineral in a locality which shows geologically no reason for that mineral's occurrence. He is then introduced to a clear outline of the sedimentary, igneous and metamorphic rocks (a section which has been well written by Mr. MacAlister). Next follow chapters on mineral and non-metalliferous deposits until one of the most interesting chapters is reached—namely, that on the recognition of minerals. Their chemical and physical characters are clearly described, and the monographs on the metallic and non-metallic elements themselves are written in an interesting manner. The search for, and identification of, minerals and metals is a very interesting subject, and a word of gratitude is due to the authors for bringing its practical study within the ken of all possessing the necessary, and not very elaborate, equipment.

International Clinics: A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, &c. Edited by W. T. LONGCOPE, M.D., Philadelphia, U.S.A. Vol. III., Nineteenth Series. Illustrated. London and Philadelphia: J. B. Lippincott Company. 1909. Pp. 296.—This number contains 23 articles and is divided up into sections dealing with treatment, medicine, surgery, gynæcology and obstetrics, orthopædics, pædiatrics, radiography, otology, neurology, ophthalmology, and pathology by American and French writers. The article on the Treatment of Tuberculosis by Dr. A. P. Fransine, in which rest in bed is insisted upon when the temperature is 100° F. or over, is dogmatic but sound in its principle. A historical note on Mesmer and Perkins' tractors by Dr. Davina Waterson of Baltimore shows that human nature a century ago was much the same as it is now as regards suggestive treatment. Graves's disease is lucidly treated from the medical and surgical point of view, but the writers do not agree except in the matter of the importance of early diagnosis. Professor G. Dieulafoy, M.D., of the Paris Faculty, gives an interesting description of some cases of gonococcic septicæmia treated by vaccine therapy with considerable success. Other articles of interest are: Some Post-Operative Complications, by Dr. D. M. Eisendrath and Dr. C. D. Straus of Chicago; Unforeseen Deaths in Scarlet Fever, by Dr. Gouget and Dr. Dechaux of Paris; Clinical Observations in Five Hundred Cases of Typhoid Fever, by Dr. Joseph A. Barach of Pittsburgh; The Radiographic Examination of the Gastro-Intestinal Tract from a Practical Standpoint, especially in connexion with the Diagnosis and Treatment of Gastro-Enteroptosis, by Dr. Henry K. Pancoast of Philadelphia; and Exotic Dysenteries, by Dr. Paul G. Woolley of Omaha. The volume is well printed, has a good index, and as a whole is a useful and readable issue.

The Phonographic Record. Issued Bi-monthly. Vol. XVI., No. 1. February, 1910. London: Sir I. Pitman and Sons, Limited.—This number contains "A Few Words from the New President," Dr. David Goyder, an informatory article by Sir W. R. Gowers on "The Neurology of the Eyelids," and "Some Thoughts on Appendicitis" by Mr. Norman Porritt, the keynote of which seems to be a warning against a too hasty diagnosis of appendicitis. The new President is a veteran who began the study of phonography in 1849 and he says it has been of incalculable assistance to him. The present generation hardly seems sufficiently to appreciate its benefits judging from the somewhat gloomy report of the honorary secretary (Dr. O. C. Gruner), whose tone is typified by the remark, "Whether anything can be done to persuade the coming student at any rate to give phonography a fair trial is problematical, but one feels that the question is of the greatest importance if the cause of medical shorthand is to be maintained." Perhaps the explanation of this falling off in the present day is the enormously increased percentage of medical lectures which find their way into print in medical journals, pamphlets, or books, saving the student the trouble of taking notes himself. Another difficulty must be the multiplication of technical terms and therefore the necessity for an extended vocabulary of conventional contractions.

JOURNALS AND MAGAZINES.

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B.; ALEXANDER MACALISTER, University of Cambridge; ARTHUR THOMSON, University of Oxford; ARTHUR KEITH, Royal College of Surgeons of England; and ARTHUR ROBINSON, University of Edinburgh. Vol. XLIV. Third Series. Vol. V., Part II. January, 1910. London: Charles Griffin. Annual subscription, 21*s.*—This number opens with a plate illustrating Professor A. M. Paterson's note in the October number of the journal on a case of Obliteration of the Left Common, External, and Internal Iliac Arteries. The articles contained in it are the following:—1. The Development of the Auditory Nerve in Vertebrates, by John Cameron, M.D., D.Sc., lecturer on anatomy, Middlesex Hospital Medical School, and William Milligan, M.D., lecturer on diseases of the ear, University of Manchester, with 20 figures in the text. The authors describe the auditory nerve and its several divisions as being brought into direct anatomical continuity with the hind brain by means of a nucleated tract of cytoplasm, to which they have applied the term syncytium, and they regard as the fundamental divisions of the auditory nerve, not the cochlear and vestibular portions, but the three that are distributed to the three semicircular canals and the three distributed to the utricle, saccule, and cochlea. 2. The Arrangement of the Bursæ in the Upper Extremities of the Full-term Fœtus, by Charles Whittaker, F.R.C.S. Edin., senior demonstrator of anatomy, Surgeons' Hall, Edinburgh. 3. The Morphology of the Testis, by D. T. Barry, M.D., F.R.C.S., professor of physiology, University College, Cork, with nine figures in the text. 4. Note on the Influence of Posture on the Facets of the Patella, by J. C. Lamont, M.B., Lieutenant-Colonel, I.M.S. (retired), lecturer in histology, University College, Dundee. 5. Abnormal Ossification of Meckel's Cartilage, by Arthur Keith, M.D., conservator of the Museum of the Royal College of Surgeons of England, with three figures in the text. 6. On the Carotid Sheath and Other Fascial Planes, by F. G. Parsons, with two figures in the text. Mr. Parsons is unable to find the sheath usually described as surrounding the carotid artery, jugular vein, and vagus nerve, and doubts its existence. 7. The Development of the Larynx, by J. Ernest Frazer, F.R.C.S., senior demonstrator in the Anatomical Department, King's College, with 19 figures in the text. This is a good memoir not adapted for abstraction. 8. The Embedding of the Embryo Guinea-pig in the Uterine Wall and its Nutrition at that Stage of Development, by E. Emrys-Roberts, M.B., Ch.B. Vict., M.D. Liverp., demonstrator of pathology, University of Bristol, with three plates and six cuts in the text from microphotographs. 9. Anatomical Notes, by Professor E. Fawcett and by Douglas G. Reid, M.B.

Revue de Médecine. Edited by M. L. LANDOUZY and M. R. LÉPINE. Thirtieth year, No. 1, Jan. 10th. Paris.—This number contains the following original papers: 1. Scarlet Fever in Children at the Claude Bernard Hospital in 1908, by Professor A. Gouget, comprising an account of the features of the disease in 858 cases, with 30 deaths. 2. The Pathogenesis and Treatment of Hæmophilia, by M. P. Nolf and M. A. Herry. This paper is their second contribution to the subject, and deals with the coagulability of the blood in this condition. 3. Radio-therapy and Basedow's Disease, by Professor R. Lépine. The patient was treated by the application of the rays to the neck. No definite improvement seems to have resulted, and the proportion of phosphoric acid to the urea of the urine increased in a manner similar to that occurring in animals after administering thyroid, from which it appears probable that the X rays increase the output of the thyroid secretion into the blood. 4. Spleno-pneumonias, by M. Mosny and M. Malloizel. This is their fourth paper on this subject and is devoted especially to diagnosis. 5. Professor Lépine contributes a note on the Utility of the Intravenous Injection of Alkalies in the Premonitory Period of Diabetic Coma. This note is written to combat the recent statement by M. Henri Stark that these solutions were of no value. This number also contains the Proceedings of the French Association for the Study of Cancer.

School Hygiene. No. 1, Vol. I. January, 1910. London: Published by the School Hygiene Publication Company, Limited. Monthly, 6*d.* net.—The January number of this new magazine contains interesting articles on numerous subjects covered by the inclusive title of school hygiene. Dr. James Kerr, educational medical officer for the London County Council, writes on elementary schools in relation to tuberculosis, saying that the prime need of many a child in London is room to sleep in, room to play in, and cleanliness, the burden of the essay being that the isolation of advanced tuberculous cases, especially of parents with four or five children all of whom are likely to become shortly affected, would greatly diminish the massive infection and would be advisable, despite its cost. The headmaster of Eton has some very shrewd things to say upon the criticism to which our public schools are now being subjected, and Dr. Luther Gulick of New York writes interestingly on athletics for girls. The magazine arrives among us at a time when the numerous problems which it proposes to deal with are exciting the maximum of interest.

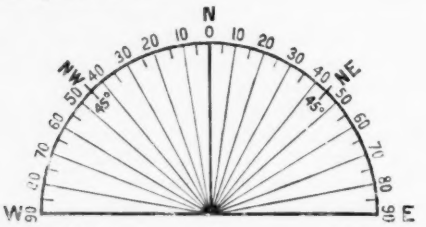
New Inventions.

A NEW AXIAL NOTATION FOR CYLINDRICAL LENSES.

THERE is not the least likelihood of any standardisation of the axial notation of cylindrical lenses being arrived at as long as the present methods of angle markings of the arcs of the trial frames are followed. The matter has recently attracted some attention in this country for two reasons. First, because the Optical Society have pledged themselves to one method; and secondly, because the International Ophthalmological Congress have recommended another. This position of affairs has led to a somewhat unedifying controversy. Slight reflection, however, must show that there is nothing surprising in this divergence of opinion and methods, inasmuch as each method is purely an arbitrary one, having no recognised principle, or standard, upon which it has been designed. To attempt to create an arbitrary standard, with a view to its adoption by all ophthalmic surgeons and opticians throughout the world, is doomed to failure, for the practical reason that, apart from individual preconceptions, such a standard would have to be proved to possess advantages over all those methods at present in use. That is the difficulty of the whole question. Every method in vogue is a workable method; but there is no uniformity, because there is no common standard; and because these methods lack the basis of a standard which is known to the world, about which no confusion could arise, it is impossible to expect any universal agreement upon the subject. Fundamentally the difficulty has been primarily created by the markings of the horizontal line upon the arcs of the trial frames. These markings are zero at one extremity and 180° at the other. Why the horizontal line should have originally been chosen, instead of the vertical one, as the basis upon which to indicate the axes of cylindrical lenses in the trial frame, is difficult to conceive. The fact that this is the case has led to the confusion of having to deal with degrees higher than 90°, whereas such a custom is quite unnecessary. But now it may be asked, Is there a standard known alike to ophthalmic surgeons and opticians throughout the world which could be utilised in this connexion? I

submit that there is—namely, the compass. Taking the mariner's compass in illustration, the poles are marked zero and the equator or horizontal line as 90°. Clearly, then, the axes of cylinders would simply require to be indicated as so many degrees from zero in approaching the equator, north-east, or north-west, according as the axis was downwards and outwards or downwards and inwards. The simplicity of this method is self-evident. There is no room for confusion, no matter how, when, or where an ophthalmic surgeon's prescription should be presented to an optician for preparation. If in doubt, all that the optician would have to do would be to refer to a compass. Moreover, by this method it would be immaterial whether the arc of the trial frame, provided it indicated the compass markings, was fixed above or below, forasmuch as in each case the axis of the cylinder would show the number of degrees from zero, except when it was vertical.

I append below a few illustrations of prescriptions inscribed upon this basis.



Right Eye.	*Left eye.*
+ 1 cyl. axis 0°	+ 1 cyl. axis 0°
+ 2 cyl. axis 15° N.E.	+ 2 cyl. axis 15° N.W.
+ 3 cyl. axis 45° N.W.	+ 3 cyl. axis 45° N.E.
− 1 cyl. axis E.	− 1 cyl. axis W.
− 2 cyl. axis 75° N.W.	− 2 cyl. axis 80° N.E.
− 3 cyl. axis 85° N.E.	− 3 cyl. axis 85° N.W.

For some weeks past I have adopted this method of marking the axes of the cylinders in my prescriptions, using the ordinary trial frame, but substituting the markings delineated thereon for those of the compass.

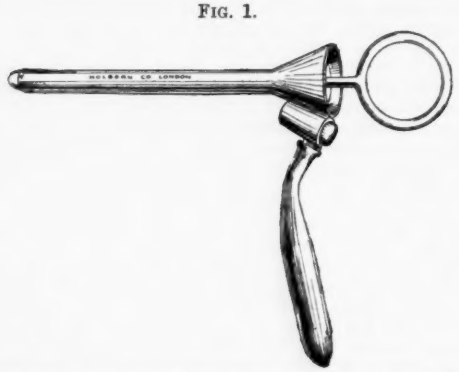
A trial frame, with the compass markings, is now in preparation for me with the arc above, an illustration of which I will take leave to send to THE LANCET as soon as the device has been completed. It will be known as the "Compass" Trial Frame, and will be obtainable from E. B. Meyrowitz, Old Bond-street, whose manager, Mr. John B. Reiner, has taken the matter in hand.

PERCY DUNN, F.R.C.S. Eng.,
Senior Ophthalmic Surgeon, West London Hospital;
Lecturer on Ophthalmology, West London
Wimpole-street, W. Post-Graduate College.

A MODIFIED URETHROSCOPE AND A RUBBER STERILISING STOPPER.

THE Holborn Surgical Instrument Company have made two appliances to my specification with satisfactory results which I should like to bring before the readers of THE LANCET. The first is represented in Fig. 1. It is a modification of

FIG. 1.



Kelly's urethroscope which may be appreciated by those who are compelled to study economy of space in packing the instrument bag or steriliser, for one detachable handle serves for each of the three regular sizes—viz., 5, 7·5, and 10 millimetres diameter. The 5 millimetres bore urethroscope without the handle forms a convenient speculum for viewing the penile portion of the male urethra and for the securing of material from the deeper portions of that canal for microscopical or bacteriological examination. The larger sizes with handle *in situ* can be used for the female urethra and bladder, and also for the vagina, and the 10 millimetre instrument will even serve in emergency as a rectal speculum.

The second appliance is the rubber sterilising stopper represented in Fig. 2. The cap is shown sealing the mouth of

FIG. 2.

a bottle containing fluid which has been sterilised by steam (A). The cap is made of soft rubber, the lower part, dome-shaped with thin walls, being slipped over the neck of the bottle (B). The upper part is solid, but with a sharp clean cut running from the centre of the disc to the top of the dome. During sterilisation the air in the neck of the bottle, expanded by the heat, is driven out through the valvular aperture in the solid portion of the stopper. On removing the bottle from the steam chamber the liquid contracts as it cools, and the pressure of the external air forces together the lips of the slit and drives the solid piece of rubber down into the neck of the bottle (C). Thus sealed, the bottle will preserve its contents sterile for an indefinite period.

J. W. H. EYRE, M.D., M.S. Durh.
Bacteriological Laboratory, Guy's Hospital, S.E.

THE CLEANING OF LONDON SCHOOLS.—Included in the education estimates of the London County Council for 1910–11 is a sum of £120 to meet the cost of a thorough weekly cleansing with soap and water of six infants' schools as an experiment. It is estimated that if all the infants' schools are cleaned in this way weekly the additional cost will be £10,500, but if an improvement in the health of the children results the increased attendance grants received from the Board of Education will compensate in a large measure for the extra expenditure. Dr. Beaton, a member of the Council, drew attention to this subject about a year ago (THE LANCET, March 20th, 1909, p. 881), when he suggested that more frequent cleansing of schools would tend to check epidemics. At present schools in London are swept once a week and the floors are washed once in three weeks.

ROYAL VICTORIA HOSPITAL, LEWES.—H.R.H. Princess Henry of Battenberg opened recently the new Royal Victoria Hospital, which has been erected on the downs near by the Sussex county town. It is intended that the new building shall eventually take the place of the present dispensary which is situated in the heart of the town, in a hollow surrounded by houses at an enclosed and noisy spot. What will become of the old building will be a matter for the consideration of the governors at some future occasion. Including the site the cost of the new building has been £6750. The architecture is of the Georgian style, but no pains have been spared to make the institution a thoroughly efficient modern hospital. The windows of the wards have been constructed so as to permit of the patients being wheeled out on to a covered verandah. It is hoped to equip the new building with entirely new furniture instead of utilising any from the old institution, and an appeal for £1000 is being made towards this end. The site and buildings of the hospital are free of debt.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 19, 1910.

The Admission of Women to the Examinations of the English Conjoint Examining Board.

THE last step has now been taken to make it possible for women students of medicine to present themselves as candidates for the examinations held by the Royal College of Physicians of London and the Royal College of Surgeons of England. Many years have elapsed since the attempt was first made to induce the Royal Colleges to examine women medical students. It may be remembered that so long ago as 1876, when the College of Surgeons was in the habit of granting a Licence in Midwifery, the Council decided to admit to the examination for this diploma some women candidates, but the Council had reckoned without the examiners, for Dr. ROBERT BARNES declined to examine these women candidates. The Council decided to postpone the examination, and no more examinations for a Licence in Midwifery were held, though not till 1888 was the Board of Examiners in Midwifery formally abolished. Meanwhile the two Royal Colleges had united to form the Conjoint Examining Board, and in all matters concerning the Licence of the Royal College of Physicians and the Membership of the Royal College of Surgeons the two Colleges acted together. In 1895 a widely signed petition was presented from the London School of Medicine for Women to the governing bodies of the two Royal Colleges, asking that their examinations should be thrown open to women. The petition was rejected by the Fellows of the College of Physicians, and the Council of the College of Surgeons expressed its regret that it was unable to accede to the request of the petitioners in consequence of the vote of the College of Physicians. In 1908 a second petition was presented, still more widely and even more influentially signed than was the first. The College of Physicians on this occasion expressed its willingness to admit women candidates, and the Council of the College of Surgeons, before replying to the prayer of the petitioners, decided to take a vote of its Fellows and Members. The result of the voting was that, though a majority of those recording their votes was opposed to the admission of women candidates, still the majority was but small and the larger number, both of Fellows and Members, did not express any opinion. The Council of the College of Surgeons, after consideration of this vote, decided to admit women students, not only to the Membership in conjunction with the College of Physicians, but also to the Fellowship of the College of Surgeons. This resolution was carried in January, 1909, but the elaborate procedure required by the Charter postponed the carrying into effect of the wording of the resolution for several months; but at last, a year later, by the recognition of the London School of Medicine for Women and of the Royal Free Hospital, the way is open for the admission of women candidates to the College of Surgeons.

In discussing the arguments for and against the admission of women students to the Royal Colleges, it was often forgotten, both by those who supported and those who opposed the movement, that the question was not whether women should be allowed to practise medicine at all, but whether they should be permitted to obtain these special diplomas. That women might practise medicine had been decided many years before, and the number of avenues by which they may obtain a diploma conferring the right to practise is now great; there is a variety of choice before them. It may well be asked, and indeed it has been asked by some who opposed their admission to the Colleges, why if so many other degrees and diplomas are open to women should they strive to force the doors of the London Colleges? Others, who favoured the change that has just taken place, argued with no small degree of justice that the wish of medical women to possess the diplomas of the two Royal Colleges was rather in the nature of a compliment. This certainly seems to us a more probable view than that which attributed to the women students a mere hankering after something which they had not got. With the University of London free to them, with many licensing boards welcoming them, it was surely an evidence of their appreciation of the value of the diplomas of the London Colleges that they should strive to obtain the right to compete for them. In admitting women to the examinations of the College of Surgeons the Council availed itself of the Act of 1876, by which any examining body capable of conferring registrable diplomas was allowed to admit women to its examinations while withholding from them the corporate privileges associated with these diplomas. Some of the Members of the College of Surgeons have contended that the Council had taken advantage of the Act of 1876, so as to avoid the need for an application for a new Charter. They argued that a lower form of diplomates had been established with none of the rights belonging to the Members, and that the Fellows who were women would have no power to vote for the election of members of Council. All this is true, but the accusations brought against the Council were neither accurate nor tasteful. And all must allow that the privilege of obtaining either the Membership or the Fellowship of the College of Surgeons is so great that successful women candidates can afford, for the present at least, to disregard the lack of other privileges which might have been expected to belong to those diplomas. At the present time a majority of the students of the London School of Medicine for Women present themselves for examination at the University of London, while only a few remain content with the Licence of the Society of Apothecaries or the qualifications of the Scottish Colleges. Although the percentage of successful women candidates at the University of London is high there are not wanting signs that the difficulties which have oppressed the London student in this connexion are beginning to make themselves felt, so that the English

Conjoint Board offers advantages to women which cannot be neglected. What proportion will avail themselves of these examinations cannot be said, of course, but we think it not unlikely that many women students will follow the example set them by most men students, and will take the diplomas of the Colleges whether or no they proceed to a degree of the University of London. A beginning has been made, for three candidates have succeeded in passing the examination in anatomy and physiology.

So much for the examinations of the Conjoint Board. For the higher examinations for the Fellowship of the Royal College of Surgeons of England there will not be wanting candidates. All the chief hospitals of London and many in the provinces require that the members of their staff must possess, if the post be medical, the Membership or the Fellowship of the Royal College of Physicians of London, and if the post be surgical the Fellowship of the Royal College of Surgeons of England. We are not here discussing the justice or even the convenience of this arrangement, but merely stating the existing situation. Those few hospitals which have up to the present been willing to appoint women members of the staff have been unable to insist on a similar rule for medical women, for these higher diplomas have been hitherto absolutely inaccessible to medical women. Now that it is possible for women candidates to present themselves for examination for the honour diplomas we may expect that the same qualification will be insisted on both for men and women candidates for staff appointments, and this in itself must create a demand for the diplomas. The industry and ambition of women students may, however, hardly need the extra incentive. Already one woman has taken the Membership of the College of Physicians, and it will not be long before candidates present themselves for the first examination of the Fellowship of the College of Surgeons. It will be of interest to see whether women candidates will show as high a proportion of failures as is now shown by men, for at the first examination for the Fellowship usually two-thirds of the candidates fail, and at the examination for the first Fellowship which was held in November only 33 candidates were successful out of 108 who presented themselves.

Recent Studies on Acute Anterior Poliomyelitis.

AT intervals during the last five years epidemics of acute anterior poliomyelitis have appeared in different parts of the globe, some of them of peculiar severity and extent. Norway, Sweden, New York and the New England States, Australia, various parts of Germany and Austria, France, Holland, and England, have all been visited. In 1907 over 1000 patients were affected in New England, and again about 300 in 1909; in the latter year an epidemic of 200 cases occurred in St. Paul, Minnesota. In 1909, further, Rhenish Westphalia, Hesse-Nassau, Vienna, and Lower Austria were visited, and the cases were numbered by hundreds. In Upminster, Essex, an epidemic of eight cases occurred in the summer of 1908; in the same year 200 people were affected with the disease at Lewistown, Pennsylvania; and there was a small epidemic in the neighbourhood of Upsala. As a natural consequence of these somewhat alarming occurrences—for the mortality throughout has been considerable—attention has been concentrated on the disease, and the problem of its nature and etiology has been attacked with redoubled vigour. Contributions on the subject have been appearing in medical journals almost monthly, and an immense advance has been made in our knowledge of this distressing malady.

The first thing which impresses itself upon us is that we must widen our conceptions of the disease as far as its seat in the spinal cord is concerned. Hitherto too much reliance has been placed on the study of chronic instances of the complaint, whereas in all the epidemics innumerable opportunities have presented themselves of observing it in the earliest stages. Thus it has become quite certain that meningeal symptoms are far from uncommon, as exemplified by pain and stiffness of the neck, pain on any movement of the head, sometimes a degree of opisthotonos, pains and stiffness along the spine, and sometimes on pressing the vertebræ. Kernig's sign has not been wanting in numbers of cases. As an almost invariable rule, however, these meningeal symptoms have been confined to the spinal cord. The meningitis, moreover, has been easily recognisable post mortem in many cases, consisting in infiltration of the meninges, some thickening of the membranes, and engorgement of their blood-vessels. In a small number of cases, relatively, the posterior horns and posterior root ganglia have been invaded, although the main seat of the disease remains in the anterior cornua. For this reason, among others, it is desirable to describe the disease as acute or epidemic poliomyelitis; the designation "infantile" must be absolutely abandoned, and perhaps also "anterior." In many cases during life lymphocytosis of the cerebro-spinal fluid has been noted, and it may well be, as PETRÉN and others maintain, that this fact will prove one of the chief points in the differential diagnosis of poliomyelitis and epidemic cerebro-spinal meningitis. It is undoubtedly the case that these two diseases have certain features in common, and some of the Norwegian investigators are undecided on the question of their identity or otherwise. Curiously enough, epidemics of the former have followed the latter in France, the United States, and Holland; in Rhenish Westphalia an acute outbreak of 500 cases of poliomyelitis followed an epidemic of spotted fever, and the two have been coexistent in Scandinavia. There is much to suggest that the virus of poliomyelitis reaches the nervous system viâ the respiratory system, perhaps by the nares and cribriform plate of the ethmoid. In the Australian epidemic cough was a common prodromal symptom; in Germany faucial inflammation was very frequent, also angina and bronchitis. In other cases intestinal symptoms have been present.

It is obviously certain that several types of the disease may occur. Statistics show that the lower extremities are more commonly involved than any other part of the body, and these results of the epidemics are substantiated by an analysis of 171 cases from the records of the Hospital for Sick Children, Great Ormond-street, published in our columns last week by Dr. KARL BREMER. An ascending

form, remarkably like Landry's paralysis, has been fairly frequent, and this fact alone makes reinvestigation of that complaint, and in particular its etiology, imperative. Polioencephalitic symptoms have been met with in a number of instances and ataxic symptoms to a much less extent. The most important and most interesting feature of the work which these epidemics have inspired has been the attempts to isolate and cultivate the toxic agent. LEINER and VON WIESNER, ROMER, LANDSTEINER and LEVADITI, FLEXNER and LEWIS, and others, have published the results of experimentation. In the present number of THE LANCET will be found a report of the investigations into the etiology of epidemic poliomyelitis prosecuted at the Rockefeller Institute, and we may briefly recapitulate by noting that the organism, whatever it is, does not belong to the group of readily stained and easily cultivated bacteria; the toxin or toxic agent obtained from poliomyelitic cord emulsion can be transmitted to apes, producing the characteristic symptoms of the disease, but the potency of the virus is not thereby lessened; after a slight attack reinoculation is almost impossible. It may be stated that in all probability the descriptions of diplococci and other organisms found in various cases must be taken with reserve. We feel that the mystery of one more infectious disease will shortly be solved, and its avenue of infection demonstrated; then will our methods of prevention, of immunisation, perhaps, and of treatment become much more effective than they are at present.

The Control of Scarlet Fever.

IN an address delivered before the Epidemiological Section of the Royal Society of Medicine early this year, which we publish in another column, Dr. F. G. CROOKSHANK drew attention to the doubts which had been expressed in many quarters as to the utility of isolation hospitals to control the course of an epidemic. He expressed his own opinion on this matter in no uncertain terms, saying, as will be seen, that even if it should be proved that the removal of cases of scarlet fever to isolation hospitals did not necessarily lessen the incidence in a particular community of the disease, yet the provision of such hospitals remained "about the cheapest thing in practical insurance offered to the small ratepayer. ..... For about 5*s.* or 6*s.* a year it insured him against all expense in the event of his household becoming stricken with infectious disease, and safeguarded him against business or professional loss." We believe that this economic view will be generally supported not only by our readers but by those members of the public who have had practical experience. A case of scarlet fever occurring in a small house involves the householder in an expense usually incommensurate with his income if the patient is nursed at home, especially if the family is a large one for the size of the house, whilst if the patient be at once removed to an isolation hospital the sanitary authorities will do all that is possible to stamp out the infection and relieve the householder of enormous responsibilities and anxieties. Dr. CROOKSHANK, however, went on to express the view that the removal of cases of scarlet fever, if properly carried out, does reduce the incidence of the disease in the community served, and here again we believe he will have both medical and public opinion on his side, though with reservations. He considers that every notified case, however mild, should be admitted to an isolation hospital, unless, of course, absolute isolation can be guaranteed at home, for from his experience he believes that the seasonal prevalence is greater when a few mild cases are treated at home. His contention that cases are not necessarily infectious in proportion to their severity should certainly be borne in mind, for it is probable that the early, atypical, intensifying cases are those in which the virus has the highest infective potency, although the amount of virus (but not the degree of potency) may be greater in the later cases of an outbreak. According to these views, therefore, every effort should be made to encourage early and confident diagnosis and the immediate transference of "first" cases to hospital, however mild or irregular they may seem to be. But Dr. CROOKSHANK appears to us at this point to leave out of all calculation the particular needs of these early cases in his apprehension lest they should prove the focus of an epidemic, and both individual members of the public, as well as their medical attendants, would be free to argue that in many cases such general advice would be unsound. There are, surely, many of these mild cases which can be treated at home with advantage to the patient, and great saving of anxiety to the parents, and to remove these cases from the care of the family medical adviser must often be not only unnecessary but unwise. The situation, as it arises, should always be made the subject of discussion between the medical officers of health and general practitioners, and should never be dealt with according to any general rule. No general rule is applicable, and it may be pointed out that there is a growing tendency amongst medical officers of health to adopt a practice quite opposite to that suggested by Dr. CROOKSHANK and to carefully select cases for hospital isolation according to the circumstances which obtain in the home—that is to say, to give up the attempt to isolate every case in hospital.

Dr. CROOKSHANK'S remarks on the details of the management of cases of scarlet fever upon admission to hospital are particularly worth attention. The old plan for the general arrangement of hospitals for infectious cases has been: "one disease, one ward-block, one staff." This has necessarily involved great expense and a large number of nurses. Dr. CROOKSHANK raises the question whether, in small hospitals at any rate, all diseases (excluding, we imagine, small-pox) may not be safely treated side by side, and has given this plan a partial trial with success. At Mortlake he has had to make use of pre-existing buildings—separate pavilions, separated by considerable open spaces and providing 36 beds on a site of four acres. Having there several ward blocks at his disposal, he has not as yet deliberately placed cases of scarlet fever and diphtheria side by side, but he has treated cases of diphtheria, typhoid fever, and erysipelas or puerperal fever in one ward, and in the admission of doubtful cases of scarlet fever or diphtheria into the wards nominally allotted to those diseases he has not transferred them when the diagnosis has been

found erroneous. Further, the distinction between diphtheria and scarlet fever nurses has been done away with. His method is to isolate patients without any mechanical apparatus such as glass walls or barriers, but by "ritual observance" only; in other words, each patient is isolated in his or her bed, the only safeguard being minute attention to cleanliness. Dr. CROOKSHANK maintains that if proper technique is observed infection can be entirely avoided. The details of this technique are related in his lecture, and should be read by all interested in this most important subject. They show how carefully the whole matter has been thought out before the responsibility implied in the change of treatment was incurred. Our knowledge of the manner in which infectious diseases are spread tends to support Dr. CROOKSHANK'S views. It is generally admitted that scarlet fever is not spread to any distance by aerial conviction; the theory that the infection is mainly derived from direct inhalation of the breath, or of air charged with minute droplets of mucus or saliva projected from the mouth or nose, and not from particles of the cuticle shed during desquamation is also accepted; so that by careful attention to the nasal discharge risk of infection is greatly lessened. With regard to the danger of patients suffering from scarlet fever contracting diphtheria some interesting considerations arise. A recognised case of faucial or laryngeal diphtheria seems rarely to cause other cases in a well-ventilated scarlet fever ward, and as Dr. F. FOORD CAIGER has pointed out, the circumstances connected with the appearance of post-scarlatinal diphtheria in certain hospitals frequently suggest that a predisposition may be engendered by the operation of some more general and widespread influence, such as an atmospheric or soil condition. The same authority also states that statistics go to prove that the incidence of the affection bears no relation to the proximity of a diphtheria ward. A similar line of argument might also be applied to the infectivity of diphtheria, for in the days that many of our readers will remember, before the identity of "membranous croup" and diphtheria was demonstrated, nearly all the cases were treated in the wards of the general hospitals, and yet the spread of the disease to other patients in the wards rarely took place.

At first Dr. CROOKSHANK'S proposals may seem startling, but if the principles he insists upon are fully comprehended and carried out and his results, so far as they go, may be provisionally regarded as suggesting that there is but little danger to be feared. It cannot be denied that by by mixing the cases better and cheaper hospital results can be secured a great step in advance will have been made, but, naturally, far more extended experience will be necessary before general action on the lines foreshadowed by this interesting paper can be regarded as in any sense justifiable. Of course, if these principles can be thoroughly carried out in private practice the expense to the local sanitary authorities might further be lessened; but when minute details are essential for the prevention of infection, they are more likely to be successfully brought into action under specialised nursing than when the care of the patient rests with unskilled attendants. It is obvious that for "bed isolation" scrupulous attention to cleanliness is essential and that considerable training for the nurses would be required before complete reliance could be placed upon them. Anything approaching a general adoption of the proposal here in question on the relatively slender evidence at present adduced would be absolutely unjustifiable, more especially as parsimonious sanitary authorities would be only too glad of an excuse for the adoption of an economical procedure such as is here under consideration. Nevertheless, the scheme is a hopeful one, and we trust that Dr. CROOKSHANK will duly report on the further results which he obtains.

Annotations.

"Ne quid nimis."

YELLOW FEVER AND ACQUIRED IMMUNITY.

IT is generally accepted as a well-established fact that in countries where yellow fever is endemic the native population is practically immune to the disease, and that Europeans who have continued to reside in the locality acquire also in time some degree of this same immunity. On the other hand, it is well recognised that the persons most liable to fall victims to the malady are those who have recently arrived within the endemic area. Up to the present time not much evidence has been brought forward respecting the nature of this acquired immunity or how it is produced. It has been suggested by Sir Patrick Manson and other writers on tropical medicine that it may be due to the occurrence in childhood of a mild attack which exhausts the susceptibility of the individual to the malady, second attacks of yellow fever being admittedly of extremely rare occurrence. Recently some interesting information on the subject has been contributed by three medical officers belonging to the French Colonial Military Service in a report,[1] which was jointly prepared by them, on an epidemic of yellow fever in 1908–09 in the West Indian island of Martinique. Prior to this outbreak the disease was believed to have been entirely absent from the colony for a period of nine years or more, and it was thought therefore that there had been a fresh importation of infection from without. Inquiry, however, showed that for many years there has prevailed in the island a febrile illness, often affecting children in a mild form, and also attacking adults occasionally, known locally under the name of "fièvre inflammatoire." This ailment occurs in varying degrees of severity, ranging from a comparatively insignificant indisposition in young children to an acute attack in adults, attended sometimes, in specially severe cases, with albuminuria, jaundice, and even black vomit. It is contended that this mild malady is in reality true yellow fever, although in the majority of instances it is not a very serious affection, and although, even in aggravated cases, it fails often to present those clinical features described by the older observers as inseparable from yellow fever. It is asserted that yellow fever is ordinarily a mild disease and that the severe symptoms given in the text-books as typical of "Yellow Jack" are the exception. An attack of "fièvre inflammatoire" is stated to give protection in the majority of people not only against a second attack of the mild disease but also against typical yellow fever, the protection generally lasting a long time, in some cases throughout life. In certain individuals this acquired immunity tends to disappear with the lapse of time, and they become again

[1] Contribution à l'Étude de l'Épidémiologie Amarile: Origine, Causes, Marche, et Caractères de l'Épidémie de Fièvre Jaune de la Martinique de 1908–09. Par MM. Simond, Aubert et Noc. Annales de l'Institut Pasteur, Nos. 11 and 12, 1909. The paper was also printed in the Annales d'Hygiène et de Médecine Coloniales, No. 4, 1909.

susceptible to a second attack, but it appears to be extremely seldom, even in the presence of epidemic influences, that a person who has had a mild attack of "fièvre inflammatoire" in his youth dies later from yellow fever. The protection thus secured resembles in some measure that conferred upon a child by vaccination against small-pox; the protection in either case may need to be renewed by a subsequent inoculation at puberty or in adult life, and the immunity is more lasting according to the severity of the primary attack of "fièvre inflammatoire." In the epidemic of 1908–09 at Martinique, during the first four months of the year, the attacks of "fièvre inflammatoire" were numerous, but the type was not severe. With the advent of the hot season, however, an increasing severity in the symptoms was observed, and ultimately the virulence resulted in producing cases which showed the clinical characters of yellow fever as described in the text-books. The summer of 1908 was exceptionally hot, and the number of mosquitoes was noted to be far in excess of previous years. The French observers at Martinique hold the opinion that heat and moisture not only favour the multiplication of mosquitoes, but that these conditions lead also to an intensified virulence in the yellow fever virus, which intensification they think takes place within the body of the stegomyia mosquito itself. The multiplication of the stegomyiæ is thought, too, to aggravate the seriousness of the yellow fever attack in another way. If a number of infected insects bite a non-immune individual a larger quantity of the virus must be inserted into the victim's body than if he had been bitten by a single stegomyia; that is to say, the administration of a larger dose of the infective material will naturally be expected to give rise to a more severe attack of the malady. The thesis of the reporters on the Martinique epidemic is, shortly, that yellow fever is endemic in that colony, prevailing from year to year in a mild form under the name of "fièvre inflammatoire," an attack of which confers protection against the severer varieties of the disease; that the type becomes more severe in the summer season, and when that season is exceptionally hot and mosquitoes have greatly increased in numbers the disease may become epidemic and cases assume a higher degree of virulence, presenting the serious symptoms of yellow fever which are described by the older observers. The latter cases are, in these circumstances, observed mostly in Europeans who have recently arrived in the island, or in creoles who have returned to the colony after a prolonged sojourn in some temperate zone. These views, as might have been expected, have not altogether met with general acceptance in Martinique, some members of the medical profession practising in the colony holding fast to the view that "fièvre inflammatoire" and yellow fever are two separate and distinct diseases. Unfortunately, since the specific organism of yellow fever has not yet been isolated and identified it has not been found possible to put this difference of opinion to the test—that is, by ascertaining definitely the presence or absence of the yellow fever germ in the system of those who are suffering from an attack of "fièvre inflammatoire." The facts as set out in the report on the 1908–09 epidemic in Martinique appear to justify in a great measure the opinion that the immunity acquired against yellow fever by a large portion of the population of that island is due to their having suffered in childhood from a mild attack of the disease in the form of "fièvre inflammatoire."

BILATERAL TUMOURS.

IN the last issue of THE LANCET appears an article by Mr. W. Roger Williams on Malignant and Non-malignant Tumours of Bilateral Origin. Mr. Williams, as is well known, has devoted much attention for many years to the difficult problems of the nature and origin of tumours, especially those which are malignant in nature, and in the article which we have mentioned he has drawn attention to the fact that in some cases of tumours, both innocent and malignant, the growths are arranged with bilateral symmetry. In the case of non-malignant growths the fact that the tumours are situated symmetrically on the two sides of the body is at least evidence that something more than merely local causes have given rise to the growths. In the case of malignant tumours, unless the growths on the two sides of the body have appeared synchronously, there is always a possible objection that the growth on one side of the body appearing first has given rise to that growth which appeared later on the opposite side. The more numerous the tumours are, the more difficult is it to feel sure that there is any special factor leading to the symmetry. Mr. Williams quotes as striking examples of bilaterality cases of multiple fibromata of nerves. In some instances more than 2000 tumours have been present. We fail to see much force in this example, for it would have been much more remarkable if with so many tumours present there had been marked unilaterality in distribution. This is only a small criticism and there is a great deal of evidence in the article which deserves attention, but whether the observations recorded and quoted here will aid at all in the solution of the difficult problem of the etiology of new growths we should hardly like to say. The wealth of reference which Mr. Williams supplies will enable our readers to investigate at first hand most of the facts on which the article is based, and there can be no doubt that sufficient attention has not hitherto been paid to the fact that cases do occur in which tumours are situated symmetrically on the two sides of the body.

PELLAGRA IN ILLINOIS.

THE Peoria State Hospital for the insane was opened in 1902 and now consists of 30 buildings, with 600 acres of land, which represents a capital expenditure of over £200,000. Last August Dr. G. A. Zeller, the medical superintendent, discovered that there were several cases of pellagra among the 2150 incurable lunatics under his care. With praiseworthy promptness Captain J. F. Siler and Captain H. J. Nichols of the United States Army Medical Corps were despatched before the month was out to study the disease in coöperation with the local medical staff. Their able report has now appeared in the *Medical Record* (New York, Jan. 15th), and we have also received the "pellagra number" of the Illinois State Board of Health bulletin (August, 1909), which is richly illustrated with striking photographs of the disease. The well-marked symmetrical eruptions are doubtless due to the fact that the asylum is managed without restraint; the windows are not barred and the grounds are not enclosed by any wall or fence; hence the exposure to sunlight during the summer months is practically unlimited. After careful examination of all the inmates and excluding many doubtful cases it was decided that 175 of the men and women were pellagrous, and that some 70 per cent. of these had suffered from previous attacks. It is now calculated that the disease has been prevalent, but unrecognised, in the asylum for at least four years, during which time complaints have been received, from friends of inmates who had died, of sunburns on the backs of the patients' hands; coroners' inquests have been held on patients who were thought to have incurred severe scalds of the feet; and attendants have been dismissed for supposed carelessness while administering hot baths. Diarrhœa, dysentery, and ulcers in the colon at necropsies were present in some cases, but a faulty water-supply was held to be responsible for some of these symptoms. The patellar and plantar reflexes were abnormal in about three-fourths of the patients and were usually excessive. Cultures of the blood, spinal fluid, and spleen pulp were negative. There

was no evidence that the maize, on which the patients were fed to the amount of two ounces per day, was diseased, but the investigators state, "The possibility of an intoxication from bacterial action on maize products in a damaged intestine is considered the most promising field for study." One of the arguments in favour of the protozoal nature of pellagra is the mononuclear increase in the blood of patients, but at Peoria this increase was not found. The complete freedom from pellagra in this asylum of the resident staff, physicians, attendants, and servants, makes it difficult to understand how the infection can have arisen through any biting insect, and as nearly all the pellagrous patients had been resident in the asylum for periods varying from two to seven years, we must agree with the report that there is "a strong indication that the exciting cause of the disease is present in the institution."

ENTERIC TRANSMISSION BY CHRONIC CARRIERS.

IN the Army Medical Department report for 1908, which we have reviewed at length recently, it is stated that special attention has been directed by the military medical authorities in India to the possibility of contamination of food by chronic typhoid carriers, that is, by persons who at some previous time have suffered from enteric fever and who continue to excrete the bacilli. In every suspicious case the blood has been examined for agglutinins, and in a number of these the urine and stools are also bacteriologically examined for the specific organism. Widal's reaction alone is no evidence that a man is a carrier. In one case, that of a regimental soldier cook who had suffered from enteric fever in 1896, it was found that he was intermittently excreting typhoid bacilli in his urine 12 years later, but no case of enteric fever occurred amongst the men whose food he cooked. The combined observations of a large number of investigators in different countries carried out in recent years tend to show that about 3 per cent. of all convalescents from enteric fever become chronic carriers, and a large proportion of these (70–80 per cent.) are women. In India some 1000 cases of enteric fever occur annually amongst British troops; of these about 200 end fatally and about 50 are invalided to England, so of the remaining 750 left in India it may be assumed that about 23 become chronic carriers. As, however, only 3 or 4 per cent. of soldiers are employed in connexion with either the cooking or preparation of food for their comrades, not more than one or two carriers can possibly be looked for as likely to be a source of infection to food supplies in the cookhouses. With a view to isolating convalescents recovering from enteric fever more completely than can be done in most stations, and at the same time providing opportunity for detecting chronic carriers with as much certainty as possible, convalescents from the Lahore, Mhow, Meerut, and Lucknow division are sent to Naini Tal. This depôt is about a mile from the civil station, and no other troops were stationed in their vicinity. The divisional laboratory is at Naini Tal under the care of a specialist officer in bacteriology. A steam disinfector for clothing and means for boiling all excreta before disposal are also provided. The urine and fæces of each man (unless he has already been found to be a carrier) are examined for about seven consecutive days, and no convalescent patient is sent back to his station until at least four months have elapsed since the cessation of fever. It was found that the great majority of convalescents cease to pass bacilli in their urine within a few weeks of convalescence. Of 190 men whose excreta were examined six were found to be still passing bacilli (five in the fæces and one in the urine) more than six months after cessation of fever; that is 3·1 per cent. of the convalescents. These men were invalided to England and were still excreting bacilli 18, 16, 12, 8, 6, and 6 months after cessation of fever. During 1908 no less than 310 convalescents from enteric fever were received at Naini Tal—that is, excluding those invalided to England—more than one-third of the convalescents from all India. During the year 1472 examinations of fæces and 1448 of urine were made. The effect of segregating enteric convalescents at Naini Tal has apparently proved beneficial in stopping the spread of the disease in other stations, for it has been found that the admissions for enteric fever from all stations in 1908 which sent convalescents to Naini Tal show a reduction of 9 per cent. on the figures for 1907, while the remaining stations show an increase of 26·6 per cent. At stations from which convalescents could not be sent to Naini Tal they were isolated locally as strictly as practicable, and where laboratories were available their excreta were examined. Five chronic carriers—two of whom were women—were discovered and also a temporary carrier who was a nursing orderly. At a conference of sanitary officers held at Poona it was recommended that all soldiers found to be typhoid carriers should be strictly segregated, and if the condition was found to be chronic that they should be invalided out of the service. As a result of the investigations at Naini Tal a similar convalescent depôt for the enteric convalescents for Southern India has been established on the same lines at Wellington in Madras.

INSANITY AND ASYLUM ACCOMMODATION IN RUSSIA.

AT the recent Congress of Russian Psychiatrists the President, Professor Bechtereff, in his address gave some striking information on the extent of mental disorders in Russia. He drew a picture of the terrible position of the neglected patients, for whom there is no room in the overcrowded hospitals and who are kept "in chains" in cheerless houses, and so on. In Russia, he stated, compared with other countries, there is less mental disease, which increases with civilisation. Whereas there is one such sufferer in 200 of the population abroad, in Russia the proportion is 1 in 450. And again abroad, whilst the number of mental patients under skilled care is, for example, 92 per cent. in England and 97 per cent. in Scotland, in Russia it is only 10; and since in Russia the number of the afflicted is at least 300,000 it follows that 270,000 are at liberty. He urged the necessity of colonies and the communal supervision of these people, as also for epileptics and other sufferers from nervous disorders who must be counted in millions and for whom nothing is done. The speaker referred to the war, the revolutionary movement, and economic and social misery as causes of the increase that has been noticed and as having produced a number of suicides and cases of drunkenness. As a radical method of reducing mental disease he advocated the suppression of the sale of alcohol. Professor Bechtereff's conclusions are very interesting. The smaller comparative number of the insane in Russia may be attributable to the fact that civilisation has not there reached the stage at which it has arrived in other countries, but the influence of civilisation upon the actual incidence of mental disease is at least a moot point, while there is little doubt that the apparent incidence of insanity is greater in the more civilised countries. Amongst persons of little education deviations from normal mentality are only classed as insane when such deviations are of the extremest nature, while deviations from the normal in the region of conduct tend to be ascribed to anything rather than to insanity. It is a current popular view that to the alienist all men are insane, and it certainly is the case that insanity betrays itself to the skilled observer when it is hidden from those of less experience. In the less civilised communities many persons pass

muster as sane who in other communities would undoubtedly be regarded as mentally infirm. For such persons it is only natural that in the less civilised communities no provision is made, while in the more civilised communities much provision is made and palatial accommodation is provided. Protected in such institutions the insane often reach the normal term of the years of man's life, and indeed frequently exceed it; whereas if they had not been so protected, and if they had been exposed to the ordinary perils and stresses of life, they would have died earlier. This early protection of the insane must be remembered as an important factor in increasing the apparent number of the insane in a civilised country. On the whole, the picture drawn by Professor Bechtereff is not a bright one, and we sympathise with the psychiatrists of Russia in the labours which await them. At the same congress Dr. E. V. Erickson gave a description of the care of the mentally diseased in the kingdom of Poland. A population of 11,500,000 is served by 20 hospitals, which is clearly not sufficient accommodation. Each government is now trying to provide its own hospital, but great difficulties, it seems, are met with. Of the arrangements in Astrakhan Dr. P. I. Davigaieff gave a painful account, where for want of means to maintain a proper staff recourse has often to be had to the strait jacket and other harsh measures.

THE INCORPORATED INSTITUTE OF HYGIENE.

THE Incorporated Institute of Hygiene, which has for its object the promotion of hygiene and the preservation of health, held its annual general meeting at the Royal United Service Institution on Feb. 14th, when Sir William Bennett, K.C.V.O., president of the institute, occupied the chair. The annual report showed that good progress is being made by the institute throughout the country. A large number of lectures have been delivered in London, the Midlands, and in the North of England, and conferences have been held on subjects affecting the public health. A permanent museum of hygiene, the first in the provinces and modelled on that in London, has also been opened at Birmingham, where the character and constituents of foodstuffs and other articles in everyday consumption are explained and demonstrated. The report also pointed out that the examinations in hygiene held periodically in the leading towns of England, Scotland, and Ireland were of great and increasing importance, owing to the fact that the candidates were chiefly school-teachers who were consequently in a position to impart much of their acquired knowledge to the young. These examinations embraced such subjects as the hygiene of motherhood, the feeding and rearing of children, food and dietetics, cooking, the hygiene of the home, home nursing and first-aid, physical training, and school hygiene. It is, of course, impossible that work of this kind can be carried on without the expenditure of money, and there is great need of a wider public support if the institute is to fulfil its duties to the community. As was pointed out by the chairman in proposing the adoption of the report, the work is principally carried out by members of the medical profession, who give much time to it without reward, but there must be many people who are in full sympathy with the endeavours of the institute, who, though unable directly to take an active part in the work, might be willing to assist it financially. Referring to the necessity for the existence of such an institute, the chairman said that it was undeniable that the first desideratum in promoting education was a condition of physical fitness, which could only be attained when infants and children were reared in circumstances where healthy growth was possible. Unhappily, however, a large percentage of children in this country were reared in an environment which rendered healthy growth almost impossible. Thousands of children were annually condemned to early graves or doomed to a life of inefficiency or decay by the ignorance or indifference of parents. These defects could not be rectified by coercive legislation, and it was to education alone that we had to look with any sureness for a remedy. Dr. J. C. Thresh, who seconded the motion, said that although the results of the work of the institute had far exceeded expectation, the movement had overgrown its strength from lack of funds, and if the work was to continue there must be greater financial support. The report was then unanimously adopted. Subsequently brief addresses were delivered by Sir George Kekewich, Professor W. D. Halliburton, Surgeon-General Sir Charles Cuffe, Mr. Mayo Robson, and Dr. A. T. Schofield, Professor Halliburton remarking that he did not quite agree with the chairman with regard to the use of education alone—legislation was also necessary. On the motion of the Rev. E. Midwinter, Mayor of Marylebone, seconded by Sir Thomas Barlow, a hearty vote of thanks was accorded to the chairman and the proceedings terminated. Before the close of the meeting, however, the secretary announced that Dr. Thresh, chairman of the council, had given a donation of £100.

INTERNAL DERANGEMENT OF THE KNEE-JOINT.

MANY years ago Hey invented the expression "internal derangement of the knee-joint" to include some sudden change in the internal structure of the joint interfering with its working and accompanied by pain. The phrase is exceedingly convenient, and has been widely used, for it does not commit the surgeon to an exact diagnosis of the condition present. At one time it was thought that all cases of internal derangement of the knee were due to dislocation of one or other of the semilunar cartilages, but it is now known that many different conditions may be present capable of giving rise to the symptoms. In THE LANCET of Jan. 15th last we printed a paper by Dr. Kenelm H. Digby of Guy's Hospital on the Displacements of the Semilunar Cartilages, and in the *Annals of Surgery* for December, 1909, Mr. Robert Jones of Liverpool published an elaborate paper based upon his personal experience of more than 500 operations for derangement of the knee. This is a very large number of cases and has been equalled by few other surgeons, if by any. It is only when a case is examined after the knee-joint is opened that the surgeon can with absolute certainty state the exact lesion that is present. Every surgeon who has had experience in these cases knows how often he has discovered some condition to be present at an operation which he had not diagnosed before the operation. It is interesting to note how varied and how slight are the causes which may lead to derangement of the knee. Mr. Jones quotes as instances of the causes which he has noted, a young lady dancing, a cricketer hitting, an old lady pushing the bed clothes with her foot, a direct blow on the knee, a slight twist, and in each of these cases something was felt giving way in the knee. The symptoms which may be present also vary greatly; sometimes the joint may become firmly locked, sometimes it is moveable; in one case the pain may be very acute and lasting, in another it may be slight and temporary, and yet these differences in the symptoms manifested are not necessarily indicative of differences in the lesion present. In Mr. Jones's paper is contained a full account of the anatomy of the knee-joint, and here he expresses the opinion that the function of the semilunar cartilages is to assist the opposite lateral ligament in resisting lateral movements of the tibia. He tells us that in practically all cases of displacement the cartilage is displaced towards the middle

of the joint (or, as he somewhat unhappily expresses it, "inwards"); when any definite protrusion is felt superficially it is due, he tells us, either to bruising or to a buckling of the cartilage. The wedge shape of the cartilage is responsible for the locking of the joint, because the thicker portion of the cartilage has been forced between the bones. The relative frequency with which the two cartilages are affected is, according to Mr. Jones's own cases, as follows: the internal is involved in 93 per cent. of his cases and the external in 7 per cent., and he ascribes this inequality to the anatomical fact that the internal cartilage is more firmly fixed by ligamentous attachments than the external, and therefore it is not capable of such give-and-take as is the external. Another reason he advances is that in a normal relation of femur to tibia the line of force is carried through the inner side of the knee; and again, owing to the shape of the internal articular surface of the tibia, the internal condyle of the femur can glide backwards on the tibia, and thus the range of internal rotation of the femur on the tibia, which is a direct strain on the semilunar, is greater than that of external rotation. Other conditions found in knees which were opened were synovial fringes nipped between the bone, loose bodies, lipomata, osteomata, and rupture of the crucial ligament, while in a certain number of the cases the most careful search failed to reveal the presence of any lesion. With regard to treatment Mr. Jones is very emphatic in insisting on the importance of early and complete reduction of misplaced cartilage, and he never operates unless recurrence has occurred. He discourages operation in those recurrent cases where the symptoms are transient and are not followed by synovitis, but he urges operation strongly in those cases where the recurrent displacement is followed by acute symptoms. He considers operation is absolutely imperative in the case of men who work or stand in dangerous places, where a giving way of the knee may lead to serious consequences. Many interesting cases are reported in the article from which we are quoting; perhaps the most striking is the following. For a long time a young woman puzzled all whom she consulted by intermittent effusions of the knee with locking of the joint but with hardly any local tenderness, and she was able to walk a mile with barely appreciable discomfort. When the knee was examined by the X rays it was found to be full of needles which she had intentionally introduced. It is interesting to note that Mr. Jones in operating on the knee never ties vessels, always uses a tourniquet until the dressings are bandaged, and never drains.

THE RATING OF HOSPITALS: A REASONABLE PROTEST.

A LETTER which appeared in the *Times* on Monday last over the signatures of Mr. Arthur Lucas and Mr. John Murray, respectively chairman and vice-chairman of the Hospital for Sick Children, Great Ormond-street, contained a protest which most people will regard as reasonable whatever views they may hold on the question of the rating of hospitals. As many of our readers know, the out-patient department of the Great Ormond-street Hospital has been provided with new accommodation by the generosity of Mr. W. W. Astor, and now that the improvements have been effected the hospital's rates have been raised as a direct consequence by £505 a year (from £795 to £1300). The authorities of the hospital complain that, whereas the charity should have shown a favourable balance of £200 on the year's work, owing to this imposition it is faced with an adverse account of £300, and they point out that the new department causes greater expenditure rather than increase of revenue, whilst the whole purpose and tendency of the hospital's work is to save expense to the community. They ask for a justifiable reason why the hospital should be mulcted to the extent of £1300 per annum for carrying out this purpose. The complaint seems to us a just one and we think that the borough should have been content with a lighter assessment, since it was obvious that no one gains any profit, pleasure, or privilege out of the additional accommodation save the sick poor, for whose relief the hospital exists. At the same time it may have occurred to the assessors that the hospital serves a far wider area than its own borough and that there was no reason why this should find municipal services for the benefit of poor persons from other boroughs without making the hospital pay for them. The whole question of the rating of hospitals is very difficult. The chairman and vice-chairman of the Great Ormond-street Hospital would solve the question by exempting all hospitals from municipal rates, and many of the medical profession are of this way of thinking. But there are counter-arguments of some force.

THE CHEMICAL LABORATORIES AT UNIVERSITY COLLEGE, LONDON: AN APPEAL.

AN appeal for funds for the new chemical laboratories of University College, London, has been made to the public through the lay press during the week. Signed by Sir Henry Roscoe, as chairman of the Equipment and Endowment Fund Chemistry Appeal Committee, it has received the warm endorsement of Lord Rosebery, Chancellor of the University, and will, we trust, obtain the immediate and favourable notice of the public. The whole scientific world will readily acknowledge the valuable work which has been done in the Chemical Laboratories of University College, London, and it would not be overstating the case to say that the present edifice of modern chemistry owes much of its superstructure to the labours of Sir William Ramsay and his colleagues and his pupils at University College. We all know now what a marvellous stimulus was given to our ideas of the knowledge of matter by the discovery of radio-activity, and nowhere has more earnest and fruitful work been done in regard to the development of the subject than in the University College laboratories. Radio-therapeutics have become possible largely through the researches of Sir William Ramsay, and his recent work promises to bring into the range of every-day application a sufficiency of material by which the curative properties of the rays may be more advantageously studied. The number of researches published during the past 22 years by members of the staff and students of the chemical department of University College amounts to 331, and of these 72 have been carried out by Sir William Ramsay and his collaborators, not the least known of whom is Professor Norman Collie. The total number of researches published from the department from 1887 to 1902 was 115, while the number issued since 1902, when the laboratories were enlarged, to the present time is already 216. In addition to the valuable results of researches obtained in these laboratories, it is important to remember also that men are passing through this interesting scene of original inquiry, preparing to go out into the world to pursue further afield their studies the foundations of which have been so well laid at home. There are very cogent reasons, therefore, why the appeal now made should find a generous response. Sir Henry Roscoe appeals for £70,000 in order that the present hampered accommodation may be supplanted by adequate and well-equipped laboratories worthy of the great work that is being done. The appeal is supported by many influential names in the worlds of literature, science, and art, and we beg to support it heartily. We notice also that, more than is usual, promptitude will be the essence of generosity in responding to this appeal. The authorities

possess a short option for the purchase of a very desirable site for the proposed additions. It would be most regrettable if the money was not forthcoming until the site had been otherwise disposed of.

A DISCUSSION ON THE CRUET.

THE abolition of the cruet has been solemnly discussed. First salt is banned on the ground that it delays digestion or has an unfavourable action akin to a mild poison and can further act as an emetic; next pepper is convicted of an irritant effect on the gastric organs, as well as upon the organs of secretion, and, besides, contains an alkaloid; then vinegar may precipitate an attack of gout, while its use to produce a colourless complexion is quoted as evidence of its injurious effects; mustard, like pepper, is an irritant also and its effects as a blister are not forgotten, in addition to which it is a well-known emetic; lastly, olive oil is indigestible, coating food with oil and so preventing the gastric juices from doing their beneficent work. On the face of it we have here a series of serious indictments which might tempt some to regard the very old institution of the cruet as after all a great human error. The acceptance of such a view betrays little knowledge. Each item of the cruet is of decided service in dietetics, and we have something more than the argument that the use of condiments is merely instinctive to support this statement. The classic experiments of Pawlow have shown how important is the rôle of the condiments in diet, how it is they improve appetite and increase digestive power. Mustard, pepper, and salt, used, of course, in sensible amounts, assist the appetite, give a zest for food, and partly by reflex action as well as local action, stimulate the flow of digestive juices and ensure healthy assimilation. Even vinegar is known to have a softening effect on tough fibres, and hence its use is justified in so many instances. Lastly, the use of oil in a salad is a sound physiological procedure, for it supplies an aliment which is deficient in the salad vegetable, while as a vehicle for the uniform distribution of food materials in the human organism it does excellent service. The reasons for the existence of the cruet and of its continued use are, therefore, by no means merely empirical, the institution is physiologically justified.

A NEW OPERATION FOR HÆMORRHOIDS.

MANY are the operations which have been devised for the adical c ure of hæmorrhoids, and the enthusiasm with which each in turn is praised by one surgeon is only equalled by the opposition which it meets with from other operators. For instance, Whitehead's operation has been, and is still, regarded by some as the very perfection of methods for the thorough removal of the hæmorrhoidal tissue, but others look upon it as needlessly mutilating and extremely liable to produce stricture. Similar opinions have been expressed in regard to ligature and to the clamp and cautery. The fact is that with any one of these methods a surgeon practised in its use can obtain excellent results, and the failures occur almost entirely in the hands of those who have had but little experience of the method. Success in most cases depends on attention to small points which are often not described in text-books, and are therefore liable to be neglected by those who have not practised the special method to any great extent. In a recent issue of THE LANCET appears an account by Mr. Norman Porritt of Huddersfield of a new operation which he has devised and employed successfully for the radical cure of hæmorrhoids. It consists essentially in the crushing of the base of the pile with a pair of crushing forceps, such as those devised by Kocher and modified by Corner for the appendix. The crushed pedicle is then covered in by drawing together the surrounding mucous membrane by means of a purse-string suture. The operation is a modification of the removal of hæmorrhoids by excision, the real difference being that the vessels of the hæmorrhoids are crushed instead of being tied. It does not appear that Mr. Norman Porritt has performed the operation in many cases, but we have no doubt that it is capable of producing satisfactory results. In all these operations, as in many others, the man who performs the operation is much more important than the method he happens to use. We should like to hear further on the subject when there is the necessary material, for the number of sufferers is very great.

VAGINAL SUTURE IN RUPTURE OF THE UTERUS.

THE best method of dealing with a case of rupture of the uterus is always a most difficult question for the practitioner to decide. In many cases the question is decided for him, since the patient is not in a condition to stand operative interference and her rapid death renders treatment of any kind impossible. At the same time a certain number of these cases recover without any treatment, and it would be easy to quote figures from the monographs written on the subject to prove the apparent efficacy of the different procedures adopted. Undoubtedly the ideal treatment, if the patient is in a condition to stand it, is the removal of the child and placenta by abdominal section whenever they have passed into the peritoneal cavity, and the subsequent removal of the uterus by complete hysterectomy. In this way perfect control of the hæmorrhage and free drainage through the vagina can be secured, and this method has the further great advantage that a source of possible septic trouble in the damaged uterus is removed. The high mortality following this operation, however, has led many surgeons to recommend less severe measures. Of these the one most frequently adopted and the most successful is the plan of plugging the tear with gauze, and so arresting the hæmorrhage and providing for drainage. It is a noteworthy fact that in most of the cases the hæmorrhage, although no doubt severe at the time, soon ceases spontaneously, and if the patient survives the immediate dangers of the accident she does not, as a rule, die from further hæmorrhage. Gauze plugging therefore probably acts rather as a drain than as a hæmostatic, and this may be the explanation of the good results obtained in these cases and the answer to the objection that any firm plugging of the tear is virtually impossible, since there is no means of making counter pressure, at any rate in complete tears. Naturally enough, when the tear has been readily accessible surgeons have made attempts to treat it by suture as well as by plugging. Cases of this kind are to be found in the literature and an interesting example is the one described by Mr. H. J. Paterson in this issue of THE LANCET. In his case the cervix and lower uterine segment were torn through for a distance of four inches, and there was as well a tear in the posterior vaginal fornix, through which a portion of the sigmoid flexure prolapsed into the vagina. The tear extended into the left parametrium, but was complete. The tear in the uterus was sewn up successfully with catgut sutures and the opening in the vaginal vault closed with a purse-string suture round a rubber drainage-tube; two large vessels which were bleeding were controlled by ligatures. Continuous proctolysis was carried out for 60 hours after the operation, and the patient made a good recovery. Mr. Paterson thinks that the advocates of hysterectomy lay too much stress upon the difficulty of controlling hæmorrhage, but in this he hardly does them justice. A considerable number of writers on this subject have pointed out that after the first severe bleeding there is often but little more,

and not infrequently when the abdomen is opened singularly few vessels require ligature. In our opinion, besides the fact that any hæmorrhage can be easily and certainly controlled by the abdominal route, the extirpation of the uterus has the great advantage of removing not only a potent source of infection, and this danger is a very grave one, but it has the further advantage of removing a gravely damaged organ and one which, as the recorded cases show, is very likely to give way in a subsequent pregnancy. We quite agree with Mr. Paterson that whenever possible in a case in which it is decided not to open the abdomen an attempt may be made to suture the tear or part of the tear, in addition to carrying out drainage by plugging, but we think he goes too far in affirming that if suturing be practicable the performance of hysterectomy is an unsurgical procedure. There are certainly cases in which any attempt to perform hysterectomy can only lead to the death of the patient, but there are just as certainly other cases in which the patient will have the best chance of recovery if the abdomen is opened and the uterus removed, and in which her chance of recovery will be very poor indeed if the operator contents himself with attempting to suture the tear through the vagina, usually a very difficult operation, and one very likely to be carried out imperfectly. It is, indeed, impossible to lay down hard-and-fast rules for the treatment of these cases, each must be judged on its merits, and the best results will be obtained, not by the adoption of any one method of treatment in all cases, but by a judicious selection of one or other of the varying methods available in cases of varying severity.

RECURRENCE OF CANCER 18 YEARS AFTER AMPUTATION OF THE BREAST.

IN the *Boston Medical and Surgical Journal* of Jan. 27th Dr. C. A. Powers has reported a case of recurrence of cancer of the breast after a remarkably long interval. On April 14th, 1889, he assisted at an operation for cancer of the breast on a married woman aged 42 years. The operation was of the Volkmann type—excision of the breast with clearing out of the contents of the axilla. The growth was diffuse and irregular, of the size of a very small apple, and occupied the lower inner quadrant. Microscopic examination showed that it was scirrhus cancer. The axillary glands were enlarged but not malignant. During the first year the patient was examined every three months, during the second year every four months, and afterwards every six months. No evidence of recurrence was found until December, 1907, 18 years and 8 months after the operation, when a small, hard mass was found about the middle of the scar. This was excised and found by microscopic examination to be cancer. In May, 1909, 18 months after the second operation, a small, hard mass was found in the scar near the site of the previous recurrent growth. In June it was excised and the microscopist reported that it was a "carcinoma of relatively mild malignancy." Late recurrence of cancer of the breast after operation was discussed by the American Surgical Association at its Washington meeting in 1907. Dr. Ranshoff reported a case in which he found a relapsing nodule in March, 1904, 21 years after an operation by Professor T. A. Reamey for microscopically proven carcinoma of the breast. Such cases show that the three years' freedom from recurrence which has been laid down as an indication of the cure of cancer of the breast is unreliable. Mr. Thomas Bryant pointed this out in our columns not many years ago,[1] and stated that the interval between amputation and recurrence is most uncertain. In half of his cases of recurrence the interval was five years or less; in the other half the interval varied from 6 to 32 years, and in at least two-thirds of these was more than 10 years.

[1] THE LANCET, May 17th, 1902, p. 1397.

A TELEGRAM from our correspondent in Madeira states that the outbreak of enteric fever which has been reported from that island is local. 14 cases have occurred, which are all doing well. Drastic measures have been taken to prevent the spread of the epidemic.

THE Morison lectures of the Royal College of Physicians of Edinburgh will be delivered in the College Hall on Feb. 28th, March 2nd, and March 4th by Dr. William Aldren Turner, who will take for his subject Epilepsy.

WE regret to announce the death, on Feb. 14th, at Kibworth Harcourt, Leicester, of Sir Charles Hayes Marriott, M.D., F.R.C.S., consulting surgeon to the Leicester Infirmary, in his seventy-seventh year.

Dr. T. Kilner Clarke, formerly surgeon to the Huddersfield Infirmary, died in that town on Feb. 14th, in his sixty-seventh year.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Feb. 18th, 1832.

RELIEF OF THE SPASMS IN THE CHOLERA. EFFLUVIUM OF BARK.

To the Editor of THE LANCET.

SIR,—Permit me, through the medium of your Journal, to draw the attention of medical men to the use of frictions with tincture of opium, for the purpose of relieving those spasms in cholera which seem to be the chief cause of agony in this disease. I am subject to tonic spasms in the calves of my legs, which I believe arise from the peculiar condition of my stomach; on one occasion, when that organ was more than usually deranged, they became excessively painful, and so impeded my power of locomotion, that I had great difficulty in getting across the room with the help of two sticks. This affection was completely removed by rubbing into my legs about four ounces of tincture of opium, surcharged, however, with double the usual quantity of that substance, and did not recur again, though the state of my stomach continued unaltered for a long time afterwards. I may observe, that I dare not take the smallest quantity of opium internally, from an idiosyncrasy in my constitution relative to it.

I cannot help thinking, that if the quantity of a quart of the hot supersaturated tincture of opium was well rubbed into a cholera patient, it would at least have the effect of making him die easy. It is moreover well known, that in many cases the stomach will retain nothing.

I am, Sir,
Your obedient servant,
CHARLES R. GORING, M.D.

P.S. I once read in a book of travels (the title of which has escaped my memory) that in some very aguish district of South America, where it chanced that a large magazine of cinchona was accumulated, the persons who inhabited the building were observed to enjoy a complete exemption from intermittent and remittent fever; the *odour* of the bark, it seems, was sufficient to protect them.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of this association will take place, by the courtesy of Mr. Rothsay C. Stewart, at the new Leicestershire and Rutland Counties Asylum at Narborough, on Feb. 24th, at 3 o'clock, under the presidency of Professor W. Bevan-Lewis.

OBSERVATIONS ON THE CIRCULATORY SYSTEM.

BY HARRY CAMPBELL, M.D. LOND., F.R.C.P. LOND.,
PHYSICIAN, WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM.

VII.[1]

The Ability of the Blood-vessels to withstand the Long-continued Strain caused by the Blood Pressure.

THE blood flows in its channels under varying degrees of pressure. In the larger arteries the pressure may sometimes reach 200 mm. Hg; even in the capillaries (e.g., those of the foot in the upright position) it may exceed 100 mm. Hg. This pressure causes the vessel walls to be put on the stretch. Now the long-continued stretching of organic tissue tends to cause a progressive, permanent elongation (i.e., elongation beyond the power of recoil) of its constituent elements; it is therefore evident that the elements composing vascular tissue must be peculiarly adapted to resist such a tendency, for otherwise the blood-vessels would undergo a progressive yielding, laterally and lengthwise, becoming increasingly dilated and tortuous.

Consider how readily such an organ as the bladder yields before a few mm. Hg of pressure, reaching as it may beyond the umbilicus in the course of a few days. Consider, again, how a thick-walled ovarian cyst may by an equally low pressure be made to expand to enormous dimensions. Consider, further, how even bone may give way before the sustained action of quite moderate pressure: the dentist is able to expand the palatal arch by continued pressure of moderate degree, and we may observe the angle of the edentulous mandible, in spite of the great strength and resistance of this bone, gradually opening out in consequence of the altered incidence of the masticatory forces. I say nothing of the expansion which the frontal and maxillary sinuses undergo when, from blockage of their outlets into the nasal chambers, they are subjected to a *plus* internal pressure, since in these cases the factor of pressure-absorption may come into play.[2] If, then, dense bone yields before long-sustained strain of quite moderate degree, is it not strange that the soft vascular tissues, subjected as they are to a life-long stretching of considerable extent, do not likewise undergo progressive yielding? Seeing that they do not, it is obvious that they must be specially safeguarded against the liability; and, indeed, it will be found that not the blood-vessels only but all the cavities and tubes of the body, the walls of which are subjected to continuous or intermittent pressure from within (e.g., the stomach, intestines, trachea, bronchi, and gland ducts), are similarly adapted to resist the tendency in question.

It should be noted that mere strength of wall—mere ability to resist rupture under a high degree of internal pressure—will not *per se* prevent the blood-vessels from steadily giving before the long-continued pressure of the blood. It having been proved that it needs a pressure some 30 times the normal arterial pressure to rupture an artery, there is a temptation to assume that the object of this great strength is to render the vessel secure against rupture by the blood pressure. Such, however, is not the case, for there is no necessary relation between the strength of a blood-vessel and the amount of blood pressure it is called upon to bear. Thus, in spite of the fact that the aorta has to sustain a greater pressure than the inferior vena cava, its bursting pressure is actually less. Wintringham showed, as long ago as 1740, that while it required no less an internal pressure than 176 pounds to rupture the inferior cava of the sheep, the aorta, although possessing considerably thicker walls, gave way before a pressure of 158 pounds.

We must, in short, keep distinct in our minds the property by virtue of which a tissue can resist rupture under sudden and forcible stretching, and that which enables it to resist permanent elongation by long-continued stretching of moderate degree. This distinction is well shown in the case of bone; it would require great force to fracture the mandible at the posterior angle, but, as we have seen, the long-continued action of a comparatively moderate force is competent to widen out this angle in the edentulous. While, however, the pressure which a particular blood-vessel has to sustain and its bursting pressure are to some extent independent of one another, we shall find that those parts of the cardio-vascular system which have to resist the greatest blood pressure are, on the whole, the most stoutly built. Thus the walls and the valves of the left heart are thicker than the corresponding parts of the right heart; the systemic arteries are thicker than the pulmonary arteries, while both are thicker than the corresponding veins; similarly the blood-vessels of the lower extremities are more stoutly built than those of the upper extremities, in accordance with the difference in the amount of hydrostatic pressure each set is called upon to sustain.

We have now to attempt to explain the peculiar property of vascular tissue which enables it to bear long-continued strain without undergoing a progressive lengthening. One fact stands out prominently in this connexion—the fact, namely, that the ability of a tissue-element to resist being permanently lengthened by stretching is intimately related to, if not identical with, its elasticity. A non-elastic substance shows no tendency to return to its original length after being extended; it remains permanently lengthened, and if it be again stretched it undergoes a further permanent lengthening. Thus so long as the stretching force continues to act, so long does the process of elongation continue—there is a progressive yielding, or giving, of the stretched substance—a summation of individual elongations. This does not happen, however, with a perfectly elastic substance. Such a substance is not permanently lengthened by being stretched: it recoils to its initial length upon the removal of the stretching force; and this power of recoil inherent in a stretched elastic substance continually antagonises the tendency of the stretching force to cause permanent lengthening. Consequently the more elastic a substance the more effective is it in this respect.

Now the blood-vessels are pre-eminently endowed as regards elasticity. This high degree of elasticity they owe to their richness in two special kinds of tissue—yellow elastic and muscle tissue. The latter, though comparatively inelastic in the non-contracted state, assumes, as we have seen, a high degree of elasticity when under contraction. Yellow elastic tissue and muscle in its contracted state are, then, peculiarly resistant to permanent lengthening by stretching, and it will be found that the proportion of these tissues in both arteries and veins is closely related to the amount of blood pressure they are required to sustain.

Relaxed muscle being less elastic than contracted muscle is, for the reason mentioned, more apt to "give" permanently as the result of stretching than contracted muscle. The truth of this is attested by many facts. Thus the process of cardiac dilatation takes place during the period of diastole, when the muscle-fibres are in a condition of considerable relaxation; similarly, dilatation of the stomach results from the distension of this organ when its muscle fibres are relaxed—even in the absence of pyloric obstruction gastric atony may alone lead to the condition; again—what concerns us more particularly in this place—chronic hypotonus of the vascular media is, as we shall see, a potent factor in the production of arterial tortuosity as well as varicosis.

Among the tissues which oppose considerable resistance to permanent lengthening by stretching dense fibrous tissue occupies a prominent place. This is shown by the behaviour of tendons and scar tissue. Tissue of this kind is, however, quite incompetent to fulfil the many requirements of the vascular system. It is true that the blood-vessels contain a certain amount of fibrous tissue, but it is for the most part loosely arranged, and is, moreover, but rarely subjected to more than moderate strain, inasmuch as (except when the blood pressure is considerable) even moderate contraction of the media prevents all the non-muscular elements of the vessel wall from being more than slightly stretched.

My attention was first drawn to the important part played by active contraction of the media in preventing the blood-vessels from becoming dilated and tortuous when making observations on the temporal arteries. In early life

[1] Nos. I., II., III., IV., V., and VI. were published in THE LANCET of Jan. 1st (p. 43), 8th (p. 121), 15th (p. 193), 22nd (p. 256), and 29th (p. 318), and Feb. 5th (p. 382), respectively.

[2] That the skeleton is not distorted by muscular action is due to the antagonistic action of opposing muscles. When, however, the action of one set of muscles predominates over that of its opposing set, marked deformity may result, as in the kyphosis of paralysis agitans, in which affection the action of the flexors of the trunk predominates over that of the extensors.

these vessels as a rule present no tortuosity, but they become tortuous in course of time, sometimes earlier, sometimes later. On the one hand, commencing tortuosity may be observed in infancy, and on the other it may be all but absent in octogenarians. There seems, indeed, to be a tendency for tortuous temporals to recover something of their pristine straightness in advanced life owing apparently to a falling of the blood pressure.

I once thought, as some probably still do, that decided tortuosity of the temporal arteries, and tortuosity even in moderate degree of the radial arteries, indicated the existence of protracted high blood pressure; and contrariwise, that the absence of decided tortuosity in the former and of tortuosity, even moderate, in the latter was proof positive that the patient had not been the subject of it. This view had to be abandoned, however, when I found that marked temporal tortuosity and some degree—indeed, sometimes a considerable degree—of radial tortuosity may occur in subjects of habitually moderate blood pressure; and, again, that in subjects of protracted high pressure the temporals may present very little tortuosity, while the radials may be perfectly straight. As a matter of fact, the temporal artery may not only present extreme tortuosity in subjects of low blood pressure, but, what is even more remarkable, it may in such subjects be highly tortuous on one side and exhibit little or no tortuosity on the other. I have a case of this kind under observation at the present time: on the left side the vessel is one of the most tortuous I have ever seen, and this tortuosity is accompanied (as morbid vascular tortuosity always is) by dilatation and thickening; on the right side it shows very little tortuosity, dilatation, or thickening. How can this difference be explained in such cases? Obviously not by reference to the general blood pressure. I submit it is due to the fact that whereas on the one side the artery has been habitually in a state of normal tonus, or possibly even of hypertonus (so that none of the coats of the vessel has been permitted to be stretched beyond a certain narrow limit), on the other side the habitual condition of the vessel has been one of hypotonus, allowing not only the muscle fibres, but all the vascular elements, to be put on the stretch. This condition of hypotonus further predisposes to tortuosity by increasing the tension in the vessel-wall, which it does in two ways—by causing a widening in the lumen of the vessel, and, to a less extent, by diminishing the local resistance to the blood flow and thus increasing the local blood pressure. It is not, therefore, surprising that protracted hypotonus of the temporal artery should lead to a permanent yielding of its walls, for not only does hypotonic muscle fibre offer less resistance to permanent lengthening than vigorously contracted muscle fibre; not only, again, does it fail in its function of bearing off the strain of the blood pressure on the other vascular elements; but it further leads to an augmentation in vascular tension in the ways just mentioned.

The thickening observed in arteries which have become dilated and tortuous as the result of long-continued hypotonus is, I believe, mainly due to a hyperplasia of the connective-tissue elements resulting from the irritation set up by chronic over-stretching of them. We have seen that with normal tonus, and still more with hypotonus, the vascular strain caused by the blood pressure is largely borne off from the connective tissue of the vessel wall. With hypotonus, however, the connective tissue elements are subjected to considerable stretching, under the stimulus of which they increase and multiply.

From the foregoing it is obvious that marked temporal tortuosity (although perhaps more common in subjects of high blood pressure than in others) does not necessarily indicate persistent high blood pressure. The like is true of radial tortuosity. We are not justified in concluding that this is sure evidence of long-continued high blood pressure. Protracted hypotonus of the radials is competent to cause them to be tortuous even in the absence of a plus blood pressure. Nevertheless, radial tortuosity is more frequently the result of persistent high blood pressure than is pronounced temporal tortuosity. I say "pronounced temporal tortuosity," because the temporal arteries are normally slightly tortuous, in adults at least.

While it is possible to get marked tortuosity of the temporals, and even of the radials, in subjects presenting habitually moderate blood pressure, we may, on the other hand, find the former vessels but little tortuous and the latter perfectly straight in subjects presenting persistent high pressure. Shortly after I had observed that no constant relation obtains between marked temporal tortuosity and persistent high blood pressure, I came across a passage in one of Sir Clifford Allbutt's writings affirming that even in advanced cases of granular kidney the radial arteries may show no signs of dilatation and tortuosity, but, on the contrary, may be firmly contracted and perfectly straight. On looking back I was able to recall (as, doubtless, many physicians can) several such cases, and, indeed, at the present moment I have under observation the case of a medical man in an advanced stage of granular kidney who, although he has had for many years a phenomenally high blood pressure, and more than once threatenings of acute uræmia, nevertheless presents small and perfectly straight radials.

Now, seeing that hypertonic arteries remain undilated and straight even when subjected to long-continued high blood pressure, and that hypotonic vessels become dilated and tortuous, even in the absence of high blood pressure, we must conclude that the tonicity of the muscular media plays an important part in obviating dilatation and tortuosity.

The tortuosity (with its attendant dilatation and thickening) met with in the vessels carrying on the collateral circulation after ligature of a large arterial trunk, such as the iliac, admits of the same explanation as the tortuosity which affects the temporal and radial arteries as the result of chronic hypotonus. We may assume that directly after ligature the collateral arteries and arterioles relax so as to facilitate the flow of blood to the parts in which the supply has been curtailed, and that in consequence the hypotonic vessels yield before the blood pressure, becoming dilated, tortuous, and thickened, just as happens in the case of a chronically hypotonic temporal or radial artery.

Exactly how the collateral vessels are made to feel the necessity to dilate in these cases I cannot say. We must suppose that the affected tissues are in some way able to make their want of blood felt by the vessels supplying them; and, indeed, there is evidence to show that the circulatory activity of a part is in large measure determined by local needs. Some authorities, however, give a different explanation of the changes which take place in the collateral vessels after ligature of an arterial trunk. There can be no doubt that immediately after the ligature the circulation through the collaterals becomes quickened. This acceleration is, on my view, mainly due to a primary dilatation of the vessels, but Recklinghausen (whom Thoma follows) explains it differently: "After ligature the collateral branches have not only their own capillaries but those of the ligatured artery at their service. The capillary area open to the collateral branches has thus become larger," and inasmuch as "the resistance which the blood stream has to overcome is mainly in the capillaries," there takes place "a fall in the resistance which the blood in the collateral branches has to overcome," and this leads to a more rapid flow of blood in them. Now I admit that, even in the absence of any such primary dilatation as I have postulated, an acceleration of the collateral circulation would take place, although in my opinion not, as Recklinghausen assumes, as the result of an increase in the number of the capillaries available (seeing that the resistance which the capillaries offer to the blood-current is practically *nil*), but rather from an increase in the number of available arterioles. But, even so, I submit that the acceleration under discussion is mainly due to a primary vaso-motor dilatation of the collateral arteries and arterioles, for otherwise I do not see how we are to explain the pronounced dilatation, tortuosity, and thickening which these vessels undergo.

Thoma views the matter differently. He contends that the dilatation is a direct result of the quickening of the blood-flow in accordance with the following law, which his study of the development of the blood-vessels in the chick has led him to formulate: "The increase in the size of a vessel lumen depends upon the rate of the blood current." How or why mere acceleration in the blood-flow should cause such an increase he does not tell us. The thickening in the vessel wall he attributes to the augmented vascular tension resulting from the increase in vascular lumen; for, according to a second law enunciated by him, "the growth in thickness in the vessel wall is dependent upon its tension." Proof of this he finds in the varying strength of the arterial,

capillary, and venous walls. In my view the thickening is due to the increased tension in the connective tissue elements of the vessel wall resulting from chronic hypotonus.

Enough has now been said to render it evident that an important function of the muscular tissue with which all the arteries in the body are endowed is, by its active contraction, to prevent them from progressively yielding before the ceaseless pressure of the blood within. Such being the case, it is no surprise to find that there is a definite relation between the amount of muscular tissue (as well as of the elastic tissue) in any given artery and the amount of blood pressure it is normally called upon to bear. Thus we find that the arteries of the lower extremities are more richly endowed with muscular (as well as elastic) tissue than are those of the upper extremities and of the head and neck, owing to the high degree of hydrostatic pressure they are required to sustain in the upright position.

In accordance with this function of the arterial muscular media we should expect the degree of contraction of the latter to vary with the degree of blood pressure the vessel is called upon to sustain; and there can be no doubt that it does so vary. When, e.g., the horizontal position is changed for the vertical the dependent arteries contract, not only to prevent their being sagged out by the hydrostatic blood pressure (thus obviating an undue accumulation of blood in dependent parts), but also for the purpose of preventing that progressive yielding which results in their permanent dilatation and tortuosity. Again, when, in consequence of a widespread arteriolar contraction in the systemic circuit, the blood pressure in the pre-arteriolar vessels rises, these latter tighten up in self-defence. This heightened tonus of the pre-arteriolar vessels may be observed in granular kidney, and so long as it persists, the vessels remain straight and undilated; if in such a case we examine the radial artery, e.g., we find that it is cord-like and perfectly straight. When, however, with arteriolar hypertonus the pre-arteriolar vessels remain hypotonic the latter undergo progressive yielding. The radials in such a case will be found to be dilated and tortuous, and the blood pressure *plus*.

I cannot, of course, prove that the largest arteries, such as the aorta and its main branches, tend to become hypertonic as the result of the heightened pressure brought about by generalised arteriolar constriction. I have little doubt, however, that such is the case, and that defect in this protective function may lead to injury in the vessel-wall. Whether, e.g., the aorta shall, or shall not, become dilated in granular kidney is not merely a question of whether it is atheromatous or otherwise diseased, but also of whether the muscular elements rise to the occasion and become sufficiently hypertonic to withstand the strain of the persistent plus pressure. I, indeed, incline to the opinion that the alterations in tonus manifested by the pre-arteriolar vessels (at all events in all arteries as large as, and larger than, the radial arteries) are in the main protective, and that they have comparatively little influence, either in regulating local blood-supply or in modifying peripheral resistance, with both of which functions the arterioles are essentially concerned. Thus, so far as concerns the blood-supply or the pre-capillary resistance in the upper extremities, it matters little whether the radial and ulnar arteries are hypertonic or hypotonic. In either case the tissues they supply can be either deluged with blood or altogether bereft of it by modifications in arteriolar tonus. I do not, of course, deny that when it is needful to bring about a maximum supply of blood to a part arteries of the size of the radial undergo active dilatation. My object is to emphasise the fact that an important function of tonus is to protect the non-muscular elements of the vessel wall from the strain caused by the blood pressure, and to obviate a progressive widening and lengthening of the vessels which the constant stretching to which they are subject would otherwise entail. I submit that the main purpose served by the muscular tissue in the larger arteries is to resist the strain caused by the blood pressure. Were the arteries devoid of muscular tissue the entire arterial tree would very soon become aneurysmal.

The part played by the muscular elements in the arterial wall in preventing a progressive yielding is further shown by the fact that arterial aneurysm only occurs when the medial coat has suffered serious damage.

(To be continued.)

MOTORING NOTES.

BY C. T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.

The 12-h.p. Adler Car.

MUCH has been heard of late years of the Adler CARS, owing to their success in reliability and other trials, among which are such feats as a first and second in the 1909 Scottish Reliability Run, four prizes and six reliability shields in the Prince Henry Contest, &c. The medical man more than any other class of motorist needs a car not larger than is absolutely necessary for his requirements, chiefly because of that one important consideration, the cost of upkeep; yet most hanker after comfort, a smart appearance, and an engine which will "pick up well," even when passing on a hill from a steep pitch to a gradient less severe. It is for these reasons so many desire a small four-cylinder. As the Adler Cars struck me as fulfilling these needs, I was glad to accept the invitation to sample one, kindly given me by Mr. Edwards, a director of Messrs. Morgan and Co., Limited, who are the sole concessionnaires for Great Britain for this make.

Usually I have taken a car through Kent for purposes of testing; for a change I decided to try the other side of London. It was in most unpropitious weather, with gloom, darkness, dirty mists, and muddy streets, that on a recent occasion I mounted one of these cars at Charing Cross—not pleasant for the tester, but even more unpleasant for the car to be put through its paces in. The roads were skiddy and unusually heavy. One turn of the starting handle and the engine commenced to work, but so silently that at first I thought it was not going. It started, too, on the magneto, the extra coil and accumulator ignition not being needed. Along the crowded streets, in and out of the traffic, the car flew, on top speed, too, even though frequently we had to pull up rather sharply, and what struck me as a special good feature was that even after an actual halt it started off again on the third (top) speed. Round by St. George's Hospital, along High-street, Kensington, through Hammersmith, which was in a state of "electionitis," so that the breaks had there a good testing as we twisted among the erratically driven voter-laden cars. On past Staines, up Egham Hill, ascending Sunninghill, then to the right by undulating roads to Bracknell, and so to Wokingham, and all but Sunninghill on the top speed—certainly a good performance for a small 4-cylinder, especially as there were three in the car, and as I, a novice at driving this make, was for part of the time at the wheel. Then to test the behaviour of the car on really rough cross-country roads we made for Barkham, up some steep bits that the second speed, however, laughed at, by Arborfield Cross, Shinfield, Three-Mile Cross, and so to Grazeley Court, the village known to so many through Miss Mitford's work. The roads were exceptionally rough and heavy, and yet so excellent is the suspension that no one could, I am sure, have desired more in the way of quiet, even running. I was astonished to discover, too, that though we had made a non-stop run of some 50 miles the radiators were so cool that I could easily keep my hand in close contact with them. The run back to town was made viâ Reading and Maidenhead, which demonstrated well the car's speed qualities on the road as well as the simplicity of control. In fact, I found that the driver has little more to do than to steer and manipulate the throttle, a conveniently located lever on the steering wheel. There is no timing lever to worry about and the ignition is fixed. There is no bother as to lubrication; it is automatic by a gear-driven pump in the crank chamber. The car seems one designed for the medico-motorist who is his own chauffeur, and though admittedly of low power it seems capable of going anywhere and of doing anything. The weight has been kept down—an important item when fuel consumption and tyre upkeep have to be considered. In short, I found that this little car leaves little or nothing to be desired, especially in regard to smooth running and suspension. I rather tried the springs on the homeward journey, for Mr. Edwards allowed another passenger, whom we picked up at Grazeley, to bring a huge box, which was fixed to a grille on the back of the car, but this extra weight did not in any way interfere with the smooth running. The body, while not large, is comfortable, and yet compact. The steering is easy, and, without any claim to

experience, a novice could manipulate the gear, changing noiselessly, and, as already stated, an average speed, well up to the legal limit, can be maintained, and nearly all my 100 miles were done on the top speed; even severe hills were mounted on the second speed, and with the first any pitch could be negotiated. So much for my run; now as to the mechanical details.

The motor is combined with the gearbox, thus ensuring absolute alignment of engine, clutch, and gearbox under all stresses or strains of the chassis; and as provision is made so that the clutch can be taken out without dismounting any other parts, this unit system of construction obviates the loss of power which a universal joint between the clutch and gearbox necessitates, and is at the same time minus any disadvantage. The bore of the four cylinder is 75 mm. each, and the stroke is 100 mm. The cylinders are cast in pairs, and each pair is surrounded by a common water jacket. The combustion chambers are likewise water-jacketed. The distributing wheels for cam shaft, water pump, and magneto are driven off the crank shaft and are supported by long bushes in the motor case, and work in an oil bath. The valves are all on one side, mechanically operated, interchangeable, and the valve lifters are adjustable and work in short guides, thus obviating possible jamming of the lifter in the guide and the trouble that may occur if one sticks and perhaps fractures. The control is by a hand-operated throttle, the lever for which is conveniently placed on the steering wheel. The carburettor is of the spray type, with an automatic additional air valve, thus ensuring a correct mixture at all engine speeds. Ignition is by magneto of the high-tension variety, and coil and accumulator. Each mode of ignition has its own separate sparking plugs. Water cooling is by a centrifugal pump, which is accessible, and if needed it can be readily dismounted. The pipes are of ample dimension. A substantial radiator is fitted which struck me as free from the tendency of so many of its species, that is, a liability to leak. A fan at the back assists the cooling, and is mounted on an adjustable bracket, which automatically accommodates itself to the stretch of the belt by the aid of a tension spring.

Lubrication is by pump, through an indicator on the dashboard, to the various bearings and gears, which are thus kept constantly oiled, all excess of oil being returned to the pump in the crank case. The clutch is of the cone type, metal to metal, runs in oil, and can be detached without the disturbance of any other part. From actual driving I found its engagement most easy, and that it permitted of very gentle starting. The change-speed gear provides three forward speeds and a reverse. It is designed so that passage from each speed direct to neutral or any other speed is possible without the need to pass through any intermediate gear. The shafts run on ball-bearings, are short, and the change is effected by the now deservedly popular gate, all the locking parts being protected in the gearbox. The top speed gives a direct drive, and on that speed the secondary shaft is not driven. The transmission is by cardan shaft, which runs through a tubular casing, carried from a socket bolted to the differential gearbox. Angular stay rods extend from the universal joint to each end of the back axle, thus forming a perfect torque member. The drive is by the usual bevel wheel and the axle runs on very large ball-bearings, and two cast steel cases support the weight and contain the live axle to the ends of which the wheels are keyed.

Each car has two brakes, one acting on the cardan shaft and differential, and the other, actuated by a hand lever, operates on two brake drums which are fitted on both driving wheels. The frame is made of pressed U steel and is exceedingly strong, the springs are semi-elliptic, and on the four-seater inverted C springs are fitted at the rear; the wheel base is 7′ 10″ for a two-seater and 8′ 10″ for the four-seater; the track is 4′ 3″. As standard 760 mm. by 90 mm. tyres are supplied. The special Morgan two-seater, with a third seat at the back for the groom, fitted with high side-doors and their new wind screen, seems an ideal car; a side-entrance four-seater is also built, as well as a most cosy landaulette.

The Rebate on the Petrol Tax.

Drivers of commercial vehicles and medical men can, of course, claim the full rebate of 3*d.* per gallon on all petrol used by them up to Dec. 3rd last, and subsequently to that date a rebate of one-half of that tax. The claim must be made on Form No. 232 B, which can be obtained from the local officer of Customs and Excise, and each certificate or receipt for petrol bought must be worded as follows:—

> Sold to ..... of address ..... gallons of petrol spirit on which the full duty has been paid to the Crown.

This certificate may be printed or written on the invoice or delivery note. Claims may not be made oftener than once a month and the spirit must have been used within six months of the date on which the claim is made, but the first period has been extended to eight months, so allowing those who apply forthwith to obtain the rebate of the tax which was imposed in April last year.

THE ETIOLOGY OF EPIDEMIC POLIOMYELITIS: RESEARCHES AT THE ROCKEFELLER INSTITUTE.

IN 1907 there was a severe epidemic of poliomyelitis anterior acuta along the seaboard of New England. As a result there were many deaths, and over 1000 of the patients are now permanently crippled. Dr. Flexner and his associates at the Rockefeller Institute consequently had access to a large number of cases, and made numerous attempts to transmit the disease to monkeys by the inoculation of the subarachnoid fluid obtained by lumbar puncture of patients at different stages of the disease. They failed, as they had previously done with the other laboratory animals. But the non-transmissibility of the disease by this means made it probable that no ordinary bacterium was responsible for it. In 1909 there was a less extensive epidemic; it was more local, and there were only a few hundred cases. This time the Rockefeller Institute succeeded in obtaining material from the central nervous system from two patients who died. One of these children, a case of average severity as regards the paralysis, died on the seventh day, and from it they succeeded in obtaining one inch of the lumbar cord. From a severe case which died on the fourth day they obtained the whole cord, but in both cases the brain was refused. From this material Dr. Lewis and Dr. Flexner have now inoculated 11 series of monkeys, and the virus has in no way diminished in potency. The animals are susceptible whether the virus is introduced into the central nervous system or by the subcutaneous, peritoneal, or intravenous route. Injection down the trachea has not, however, yet produced the disease. The lesions are always in the same locality, that is, cord-bulb, spinal ganglia and roots, and the meninges covering them, and rarely in the cerebrum. The lesions tend to preponderate low down. Of the 81 cases, the legs were affected in 40, both legs in 20, all four limbs in 10, the arm in 31, and the neck alone in 1 case, although it was often implicated along with other regions. In only 8 cases were the bulb and cortex affected; in these facial paralysis was the feature. It is a blood-vascular disease apparently, not travelling by lymph channels, except that the glands in the neighbourhood of the site of subcutaneous inoculation become inflamed; but they never do so except in the neighbourhood, and never at all after internal inoculation. Moreover, little virus is found in the spleen, liver, or bone marrow. Even the blood is of low virulence, and that only early in the disease.

As regards the *nature of the virus*, it is very active, but invisible even by special illumination. It is not arrested by the finest filter. So far, the investigators have not succeeded in staining it nor in cultivating it, unless a transmissible cloudiness in certain media may be regarded as a culture. These cultures do not transmit the disease, thus differing from the invisible organism of pleuro-pneumonia. The question arises whether it is a saprophyte, for so far no invisible one is known. May it not be a bacterium after all, for it resists 30 days at — 2° C.? Drying for seven days over caustic potash does not diminish its virulence, nor does admixture with glycerine. It even resists 5 per cent. phenol. Numerous suspensions in water and long keeping do not render it inactive; but it is sensitive to heat, becoming inert at 45° C. In its transmissibility it shows many analogies with the diplococcus intracellularis; and Dr. Flexner believes that both organisms enter and leave the body *viâ* the nares, the cribriform plate, and the cerebro-spinal fluid. It will be recollected that he proved the possibility of this with regard to the Weichselbaum coccus by

introducing cultures low into the theca vertebralis and later finding the organism in the monkey's nares; and he has now found that at one stage of poliomyelitis the cerebro-spinal fluid does show virulence and suggests this route as worth inquiry. In this connexion recent work of Levaditi at the Pasteur Institute shows that the saliva is infective while still in the gland and suggests further investigation. Dr. Flexner, however, from the character of the lesions, thinks that poliomyelitis begins in the meninges. Even after a very slight attack an animal strongly resists re-inoculation. This is only in conformity with the rarity of second attacks in human beings, although there have been a few cases where, as far as clinical evidence goes, what appears to be a poliomyelitis has occurred in persons already showing infantile paralysis. Relapses or recrudescences are perhaps less rare. Whether the strictly abortive attack confers immunity is another question which Dr. Flexner hopes will very soon be decided by his experiments. It can be answered both by inoculation experiments and by the results of the immunity reactions. The material of this kind is still insufficient to permit report, but very soon there promises to be definite information, for several of the monkeys have manifested merely a slight general malaise without paralysis or even weakness. Those inexperienced in observing the animals might indeed have believed them in quite good health, as no fever is shown in the prodromal stage. But Dr. Flexner is unable to indicate as yet the clinical symptoms which precede the paralysis.

Incubation has varied from 4 to 33 days. The average is about eight days, as in human beings. The recovery of function, as in human beings, is complete after a slight attack, but only partial when the attack is severe.

The *mortality* seems to be higher than in human beings, 50 per cent. of the monkeys having died. As far as the, as yet, imperfect study of the symptoms permits, Dr. Flexner believes that Landry's ascending paralysis may be often due to this virus, as further observation will perhaps demonstrate.

It is interesting to note that although only monkeys are susceptible to this particular virus, other animals are attacked by a poliomyelitis; for instance, nervous distemper of the dog is of this nature, but pathologists have not yet succeeded in transmitting it; and the poliomyelitis of chickens has not been successfully inoculated. In rabbits the Shiga bacillus causes a hæmorrhagic poliomyelitis, generally cervical. So it is quite clear that there is a whole genus of organisms capable of producing this anterior horn syndrome, but it is pretty clear, too, from Dr. Flexner's researches that the human form is specific.

The post-mortem examination of the monkeys makes it quite clear, as clinicians and pathologists have for some time suspected, that the affection is not confined to the anterior horn. In the monkeys which died inflammation was always found in the intervertebral ganglia and spinal roots. The infection seems to be located in the pia and to spread thence *viâ* the trabeculæ into the central nervous system. Sections show a considerable small round-cell infiltration of the ganglia on the spinal roots. The cells are of the mononuclear type and occur also in the subarachnoid space, and in the cord, especially round the anterior horn, an abundant round-cell exudate, and dilatation, enlargement, and sometimes rupture of the blood-vessels are found. This implication of the roots and ganglia explains the severe pains of which adult cases often complain. In the child, of course, the general distress often masks the local pain.

It is interesting to note that in Weichselbaum's laboratory they have also succeeded in inoculating the monkey with the virus of anterior poliomyelitis. We may have strong hope that in a very short time the completion of these researches will provide us with a means of immunising human beings against still another contagious disease, or at least of cutting short an attack, as is now the case in cerebro-spinal meningitis. But even if this hope is not realised, Dr. Flexner's experiments will show us the path of infection, and thus furnish another means by which to prevent disease; for up to now we have had to fight quite in the dark against an unknown foe, and means of prevention cannot but lack in precision under such conditions. But when we know the avenue of infection means of prevention are often found to be very simple. Even in the case of poliomyelitis, where we scarcely know the child is sick until the disease is at its worst and paralysis has occurred, a way may now be found.

LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

SEVERAL matters of medical interest came before the Education Committee of the London County Council at a meeting on Feb. 9th.

Schools for Tuberculous Children.

The special schools subcommittee reported that the Paddington Dispensary for the Prevention of Consumption had applied for assistance from the Council in the establishment of a special school for children suffering from, or predisposed to, tuberculosis, and children discharged from sanatoriums and convalescent homes, and being treated by the dispensary. At present 300 children between the ages of 5 and 15 attend the dispensary and only a few go to school. The subcommittee were in favour of the suggestion of the dispensary, as the children would be under the constant supervision of the dispensary's medical officer and would be considerably benefited by being educated in rooms with open windows and under conditions in which the schoolwork could be arranged with due regard to the children's health. Premises known as Kensal House, Harrow-road, had been suggested for the purpose of the school. The house was a large one, standing in its own grounds near the Paddington Canal, and the first two floors, which alone were proposed to be used at present, would provide 120 school places. The committee of the dispensary would be responsible for adapting the premises, the funds necessary for this purpose and for the rent, having been guaranteed for three years. The Council would only be responsible for the annual maintenance, estimated at £796, against which should be set the Government grant, amounting to probably £500 a year, leaving only £296 to be met by the rates. The Education Committee approved the experiment for three years.

X Ray Treatment of Ringworm.

When the Council on Nov. 30th last approved arrangements for medical treatment of children at certain hospitals the question of the capitation grant to be paid in the case of ringworm treatment was reserved, as the cost of the X ray method was not known at the time. Experiments had been conducted at the Charing Cross and St. George's Hospitals with the object of ascertaining this cost. Each hospital provided treatment for 25 cases and the cost, apart from payments to clinical assistants, had worked out at 7*s.* a case at Charing Cross Hospital and 8*s.* 8*d.* at St. George's Hospital. The agreements with these hospitals provided that the amount of the capitation grant in respect of ringworm treatment should be fixed in accordance with the result of these experiments, and the subcommittee therefore recommended the payment of a grant to Charing Cross Hospital of £70 a year and to St. George's Hospital of £87, each institution having undertaken to provide treatment for 200 cases this year. This was agreed to. The subcommittee also dealt with the question of the recovery from parents of the cost of ringworm treatment. In the light of the two experiments mentioned above the cost of treatment (including clinical assistance) would appear to be from 15*s.* to 22*s.* per case, five attendances at the hospital on the average being necessary to effect a cure. As stated in a previous report,[1] the subcommittee considered it undesirable to vary the charges to the parents and therefore advised that the lowest estimate, 15*s.*, should be adopted in recovering the cost from parents, and that 3*s.* per attendance for not more than five attendances should be the full charge. Reductions would be made according to the poverty of parents in accordance with the scale adopted on Dec. 22nd. This report was withdrawn pending further consideration of the matter.

The Cost of the Council's Schools.

The greater part of a protracted sitting was devoted to consideration of the education estimates for 1910–11, representing an expenditure of between three and four millions sterling. The items included £68,985 for the provision of meals for necessitous children, and £20 was set down on the receipts side as likely to be recovered from parents. Medical inspection and treatment were estimated to cost £19,075 (£4000 being for treatment), and there were further provisional estimates of £4000 to meet the cost of extensions

[1] THE LANCET, Jan. 1st, 1910, p. 51.

of treatment and £1025 in respect of extra medical inspection. £1000 was the estimate of the sum likely to be recovered from parents in respect of treatment. Mr. Bray moved, and Dr. Beaton seconded, an amendment to increase the provisional estimate of £4000 for medical treatment to £8000, in order that the Council might begin to deal with teeth, but the amendment was rejected by 19 votes to 8. Mr. Jay, in defending a policy of inaction, said the committee had not yet succeeded in inducing the parents to bring their children to be treated for the ailments the Council was dealing with. In some cases it was extremely difficult to get the children to attend at the hospitals, and it would be well not to extend operations for a time. Dr. Beaton also criticised an item of £100 for the maintenance of a laboratory concerned with the infectious diseases of school children. He urged that £100 were utterly inadequate for the purpose, and mentioned that the Water Board spent from £6000 to £7000 annually on its laboratory. The item, however, was passed.

The Provision of Meals for Necessitous School Children.

The Education Committee reported to the Council on Feb. 15th as to the difficulties which arise through the overlapping of the work of the Council in the provision of meals for necessitous children and of the London boards of guardians under the Acts dealing with the relief of the poor. There was no uniformity of policy or action (said the committee) amongst the 31 boards of guardians. For example, there could hardly be a wider divergence of principle and practice between public bodies than that which existed between such boards as Paddington, Fulham, and St. George-in-the-East on the one hand, and Islington and Poplar on the other. In Fulham the guardians, in assessing relief, took into account the extent to which school meals were supplied to the children of a family; in Poplar the guardians had informed the care committees that "the fact that a family is in receipt of Poor-law relief should not be a reason for not supplying the children with meals." Information was being obtained as to all cases of overlapping, but it must be remembered that the majority of cases were on the border-line and would need to be considered on individual merits. A further difficulty was the variation of home conditions. Out-relief adequate one week might be inadequate the next owing to the supervention of misfortune. The following appeared to be possible solutions of existing difficulties: (1) The Council should refuse to supply meals to children whose parents were already in receipt of relief from the guardians; (2) that in respect of children attending school the guardians should purchase from the Council school meals for the children of families receiving relief; and (3) that the Council should assume responsibility for, and bear the cost of, feeding such children on school days, allowing the guardians to adjust the relief accordingly. The Education Committee thought the second solution preferable, believing that some boards of guardians would be prepared to accept it. The committee recommended that representations be made to the Local Government Board and the Board of Education in accordance with its suggestion. This was agreed to.

The Health of the Council's Schools.

Reporting on Feb. 15th on matters of current administration during the December quarter, the Education Committee stated that during the period under review the health of the children attending the elementary schools had been very satisfactory. 45 schools had been under observation for diphtheria, 260 cultures were taken and tested bacteriologically, and as a result 28 children were excluded from school. The prevalence of diphtheria was far less than in the corresponding period of 1908. 148 schools were under observation for scarlet fever, but the severity of this complaint was less marked than in the Christmas quarter of 1908. 154 schools were under observation for measles—a complaint most prevalent, of course, in the spring. No serious epidemic of measles occurred from August to December, 1909, and the total number of cases was less than one half the number in the corresponding period of 1908. Between 600 and 1000 cases of ringworm were reported each week.

Lunacy Statistics for the County of London.

The returns furnished to the Council, in accordance with statute, by the London boards of guardians, show that on Jan. 1st, 1910, the total number (*a*) of lunatics under certificate in London county asylums, or in other county and borough asylums or licensed houses under contract, or pursuant to arrangements made by boards of guardians, and (*b*) of lunatics in workhouses (including those in the Metropolitan Asylums Board's asylums for imbeciles) or with relatives or friends, is 26,386, as against 26,293 on Jan. 1st, 1909, an increase of only 93. This is the smallest increase (the Asylums Committee stated in a report to the Council on Feb. 15th) recorded since Jan. 1st, 1901, and compares favourably with the increase of 678 recorded on Jan. 1st, 1909, of 403 on Jan. 1st, 1908, and of 400 on Jan. 1st, 1907. Dealing only with the number of lunatics for whom the County of London is responsible to find accommodation (excluding private patients at Claybury Hall), the total on Jan. 1st, 1910, was 19,919, as against 19,716 on Jan. 1st, 1909, an increase of only 203—the lowest increase since Jan. 1st, 1892.

MEDICINE AND THE LAW.

Keogh v. *The Incorporated Dental Hospital of Ireland.*

AN action was recently tried at Dublin in the King's Bench Division in which the plaintiff, Myles Keogh, sought to recover £5000 damages from governors of the Incorporated Dental Hospital of Ireland. The plaintiff in January, 1885, was bound apprentice to a dentist since deceased, and on the completion of his term as such worked for the same employer as a mechanical dentist. Evidence was given by the plaintiff that at intervals and up to 1908 he sought to be admitted as a student at the hospital, that he submitted himself for examination, and that a fee had been at one time accepted from him by the hospital. This, however, was apparently before its incorporation, and subsequently, in 1904, a cheque for the amount was forwarded to him by the authority of the board of governors and returned by him. The letter enclosing it stated that the dean of the school had no power to admit the plaintiff as a student at the time when the fee was paid, and subsequent applications of the plaintiff for admission met with refusal. The action brought by him was not, however, founded directly upon this refusal, but took the form of an action for libel based upon a resolution of the board of governors to the effect that he could not be accepted as a student which had been forwarded to him by the direction of the board in May, 1908, in reply to a communication from him. The letter containing the resolution arrived at a time when Mr. Keogh was away from home, his absence being explained by him in his evidence as due to the fact that he was practising dentistry, having a considerable number of patients, and attending as dentist at institutions round Dublin. He employed an assistant, Mr. Kelly, who in the absence of his employer opened and read the letter and resolution, this constituting the alleged publication of the libel. As to this the plaintiff's counsel argued that it was notoriously the practice of busy professional men to have their letters opened by others and that the risk was one which their correspondents must take account of. We do not find that in the report before us the judge negatived this rather novel view of the law as to publication, but it was submitted to him by Mr. T. M. Healy, K.C., for the defence that there must be knowledge in such a case that a clerk was kept, that there was no publication, that the communication was privileged, and that there was no libel. The judge was of the opinion that there was privilege and also that there was no evidence that the publication was made with malice, and directed the jury to find a verdict for the defendants. He, however, spoke of the probability that the case would not end with that verdict, and in the circumstances comment would be out of place.

LAUNCESTON (CORNWALL) INFIRMARY.—The annual meeting of the subscribers to the Launceston Infirmary was held on Feb. 8th. The medical report was satisfactory and showed that during the year a new wing had been added to the institution and an operating table had also been presented. A considerable discussion took place in reference to the suggested admission of paying patients, and eventually a committee was appointed to report upon the matter.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

The County of Hants.—Dr. R. A. Lyster, the medical officer of this county, only commenced his duties towards the end of the year 1908, and he has not therefore been able to present a comprehensive report for that year, more especially so since the pressure of very important work such as the organisation of the medical inspection of school children throughout the county has absorbed a very large proportion of his time. Of the 38 district reports received by this county medical officer 19 were printed, 18 typed, and six were in manuscript—a not very creditable condition of affairs for a county such as Hampshire. In more than half the districts the councils would appear to take such little interest in sanitation that they do not encourage the printing and circulation of the annual reports of their medical officers of health. Dr. Lyster will, we trust, be able to gradually alter this condition of affairs, and we must say that we should like to see the printing of annual reports made compulsory. There are few things which stimulate the councils, their officers, and the public more than a vigorous annual report. During 1908 the three inspectors of weights and measures took 600 samples of food and drugs for analysis, and of these 27 were found to be adulterated. Of the samples of milk examined 8 per cent. were adulterated, but of course these figures do not relate to the percentage of the samples which contained the tubercle bacillus. In this county the inspection of midwives is carried out by the Hampshire Nursing Association, an annual fee of 1 guinea for each midwife up to 300 and 15*s.* for each above that number being paid. There are at present 198 midwives in the county. Eleven of these were reported as unsatisfactory during 1908 and one was removed by the Central Midwives Board. In Aldershot, which is not embraced in the county scheme, the 21 midwives are inspected by the medical officer of health. The infantile mortality in the administrative county as a whole averaged 84 per 1000 births, the rate for the urban districts being 98, and that for the rural districts 74. In the urban districts the rates ranged from 29 in Havant to 137 in Farnborough, and in the rural districts from 21 in Christchurch to 128 in Havant. Dr. Lyster refers to the alarming number of stillbirths which occur in the practices of midwives, and he expresses the view that notification and registration of such cases should be compulsory, since there is, he adds, reason to suspect the good faith of many of the midwives in this matter. The estimated population of Hampshire for 1908 was 406,933 and the general death-rate 11·4 per 1000. The birth-rate was 24·08, the zymotic death-rate 0·69, and the tuberculous death-rate 1·17—per 1000 in each instance. The body of the report is composed of illustrative observations from the reports of the district medical officers of health arranged under subject headings, and we shall doubtless in Dr. Lyster's next report have an interesting digest of all this material.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8416 births and 5311 deaths were registered during the week ending Feb. 12th. The annual rate of mortality in these towns, which had been equal to 14·8, 16·3, and 17·0 per 1000 in the three preceding weeks, declined again to 16·6 in the week under notice. During the first six weeks of the current quarter the annual death-rate in these towns averaged 15·7 per 1000, and the mean rate in London during the same period was equal to 15·6. The lowest reported annual rates of mortality in the 76 towns last week were 7·5 in Willesden, 8·3 in East Ham, 8·8 in Halifax, and 9·0 in Hornsey; the rates in the other towns ranged upwards, however, to 23·7 in Swansea, 23·8 in Burnley, 24·6 in Devonport, and 26·5 in Rochdale. In London the recorded death-rate last week was equal to 17·5 per 1000. The 5311 deaths registered in the 76 towns last week showed a decline of 125 from the number in the previous week, and included 331 which were referred to the principal epidemic diseases, against 361 and 354 in the two preceding weeks; of these 331 deaths, 162 resulted from whooping-cough, 45 from diarrhœa, 41 from measles, 40 from diphtheria, 31 from scarlet fever, and 12 from "fever" (principally enteric), but not one from small-pox. The mean annual rate of mortality in the 76 towns last week from these epidemic diseases was equal to 1·0 per 1000, against 1·1 in each of the two preceding weeks. No death from any of these epidemic diseases was registered last week in Croydon, Blackburn, Leyton, Plymouth, or in 11 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 3·2 in Swansea and in Coventry, 3·4 in Burnley, 4·9 in Devonport, and 5·1 in West Hartlepool. The fatal cases of whooping-cough, which had been 165 and 157 in the two preceding weeks, rose again to 162 last week; they caused annual death-rates, equal to 1·8 in Aston Manor, 2·2 in Walthamstow, 4·3 in Devonport, and 5·1 in West Hartlepool. The 45 deaths attributed to diarrhœa showed a slight increase upon recent weekly numbers. The fatal cases of measles, which had steadily declined in the four preceding weeks from 61 to 48, further fell to 41 last week; the highest rates from this disease last week being 1·5 in Hastings and 1·6 in Swansea. The deaths referred to diphtheria, which had been 44, 51, and 67 in the three preceding weeks, declined last week to 40; they included, however, 8 in Manchester and Salford. The 31 fatal cases of scarlet fever exceeded by but one the number in the previous week; 8 were recorded in London and its suburban districts, 4 in Liverpool, and 4 in Burnley, which were equal to an annual rate of 1·9 per 1000. Only 12 deaths were referred in the 76 towns last week to "fever," a lower number than in any recent week. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, which had steadily declined in the 17 preceding weeks from 2819 to 1937, had further fallen to 1881 on Saturday last; 212 new cases of this disease were admitted to these hospitals last week, against 193 and 213 in the two preceding weeks. The Metropolitan Asylums Hospitals contained but one case of small-pox on Saturday last. Of the 1632 deaths registered in London last week 425 were referred to pneumonia and other diseases of the respiratory system, against numbers increasing from 285 to 392 in the four preceding weeks; these 425 deaths exceeded by 7 the corrected average number in the corresponding week of the five years 1905–09. The causes of 39, or 0·7 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in London, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Leicester, Salford, and in 48 other smaller towns; the 39 uncertified causes of death in the 76 towns last week included 8 in Liverpool, 8 in Birmingham, 3 in Hull, and 2 each in Birkenhead, Preston, Sheffield, and Sunderland.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 908 births and 615 deaths were registered during the week ending Feb. 12th. The annual rate of mortality in these towns, which had been equal to 15·5, 19·1, and 20·5 per 1000 in the three preceding weeks, declined again to 17·0 in the week under notice. During the first six weeks of the current quarter the annual death-rate in these towns averaged 18·2 per 1000, and exceeded by 2·5 the mean rate during the same period in the 76 largest English towns. The annual death-rates last week in these eight Scotch towns ranged from 11·7 and 12·4 in Paisley and Aberdeen, to 21·5 in Dundee and 27·6 in Greenock. The 615 deaths from all causes in the eight towns last week showed a decline of 129 from the high number in the previous week, and included 92 which were referred to the principal epidemic diseases, against 77, 99, and 100 in the three preceding weeks. These 92 deaths were equal to an annual rate of 2·5 per 1000; the mean death-rate from the same diseases in the 76 English towns last week did not exceed 1·0 per 1000. The 92 deaths from these epidemic diseases in the Scotch towns last week included 55 from measles, 13 from diphtheria, 11 from diarrhœa, 7 from whooping-cough, 3 from scarlet fever, and 3 from "fever," but not one from small-pox. The fatal cases of measles in the eight towns, which had been 54 and 46 in

the two previous weeks, rose again to 55 last week, of which 43 were recorded in Glasgow, 9 in Edinburgh, and 2 in Greenock. The 13 deaths referred to diphtheria were within one of the number in the previous week, and included 4 in Glasgow, 3 in Edinburgh, and 2 in Dundee. Of the 11 deaths attributed to diarrhœa 4 occurred in Glasgow, 3 in Dundee, and 2 in Edinburgh. The fatal cases of whooping-cough, which had been 8 and 9 in the two previous weeks, declined to 7 last week, but included 5 in Glasgow. The 3 deaths from scarlet fever, against 11 in the previous week, were all recorded in Glasgow. The 3 deaths referred to "fever" were also recorded in Glasgow, and included 2 certified as enteric and 1 as cerebro-spinal meningitis. The deaths in the eight towns referred to diseases of the respiratory system, which had been 101, 123, and 150 in the three preceding weeks, declined again last week to 110, and were 27 below the number returned in the corresponding week of last year. The causes of 14, or 2·3 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 646 births and 575 deaths were registered during the week ending Feb. 12th. The mean annual rate of mortality in these towns, which had been equal to 19·1, 21·1, and 25·0 per 1000 in the three preceding weeks, further rose to 26·0 in the week under notice. During the first six weeks of the current quarter the annual death-rate in these Irish towns averaged 22·3 per 1000, whereas the mean rate during the same period did not exceed 15·7 in the 76 largest English towns and 18·2 in the eight principal Scotch towns. The annual death-rate last week was equal to 26·4 in Dublin, 22·9 in Belfast, 26·7 in Cork, 20·4 in Londonderry, 16·4 in Limerick, and 44·8 in Waterford; the mean annual death-rate last week in the 16 smallest of the Irish towns was equal to 33·4 per 1000. The 575 deaths from all causes in the 22 town districts last week showed a further increase of 23 upon the numbers returned in the three preceding weeks, and included 32 which were referred to the principal epidemic diseases, against 29, 30, and 34 in the three preceding weeks; these 32 deaths were equal to an annual rate of 1·4 per 1000; in the 76 English towns the mean rate from the same diseases last week did not exceed 1·0 per 1000, while in the eight Scotch towns it was equal to 2·5. The 32 deaths from these diseases in the Irish towns last week included 19 from whooping-cough, 7 from diarrhœa, and 2 each from measles, scarlet fever, and diphtheria, but not one either from "fever," or small-pox. The fatal cases of whooping-cough, which had been 18, 21, and 25 in the three preceding weeks, declined again to 19 last week, and included 15 in Belfast and 4 in Dublin. Six of the 7 deaths attributed to diarrhœa occurred in Dublin; and the 2 fatal cases of measles were recorded in Ballymena, the 2 of scarlet fever in Belfast, and the 2 of diphtheria in Dublin. The deaths in the 22 town districts referred to pneumonia and other diseases of the respiratory system, which had been 107, 131, and 140 in the three preceding weeks, further rose to 185 last week. The causes of 19, or 3·3 per cent., of the deaths registered in the Irish towns last week were not certified; in the 76 English towns the proportion of uncertified causes of death did not exceed 0·7 per cent., and in the eight principal Scotch towns it was equal to 2·3 per cent.

VITAL STATISTICS OF LONDON DURING 1909.

IN the accompanying table the statistics of sickness and mortality in the City of London and in each of the metropolitan boroughs are summarised for the year 1909. The mortality figures relate to the deaths of persons actually belonging to the various boroughs, and are obtained by distributing the deaths in institutions among the boroughs in which the deceased persons had previously resided. With regard to the notified cases of infectious disease, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to a rate of 6·1 per 1000 of the population, estimated at 4,833,938 persons in the middle of last year; in the three preceding years the rates were 7·5, 8·6, and 7·4 per 1000 respectively. Among the various boroughs the rates ranged last year from 3·3 in Stoke Newington, 3·8 in Hampstead and in Holborn, 4·0 in the City of London, and 4·3 in Kensington, to 7·0 in Poplar, 7·1 in Stepney, 7·3 in Bethnal Green, 9·0 in Lewisham, and 10·6 in Woolwich. 21 cases of small-pox were notified in London last year, against 8 and 4 in the two preceding years; these 21 cases included 8 belonging to Stepney, 3 to Islington, and 2 to Southwark. The prevalence of scarlet fever showed a considerable decrease last year, the number of cases notified being 17,251, against 25,925 and 22,072 in the two preceding years; among the various boroughs this disease was proportionally most prevalent in Paddington, Chelsea, Bethnal Green, Poplar, Lewisham, and Woolwich. The Metropolitan Asylums Hospitals contained 2329 scarlet fever patients at the end of last year, against 3787, 4956, and 3498 at the end of the three preceding years; the admissions during the year numbered 16,183, against 23,953 and 20,862 in the two preceding years. Diphtheria also showed a markedly decreased prevalence last year; the notifications of this disease, which had been 8771 and 8002 in the two preceding years, declined last year to 6685, and were proportionally most numerous in Fulham, Finsbury, Shoreditch, Stepney, Lewisham, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1168 and 1241 at the end of the two preceding years, had declined to 904 at the end of last year; 5799 new cases were admitted during the year, against 7303 and 6797 in the two preceding years. Only 1042 cases of enteric fever were notified last year, against 1394 and 1357 in the two preceding years; this disease was proportionally most prevalent in Kensington, Islington, Holborn, Shoreditch, Bethnal Green, Battersea, Poplar, Deptford, and Greenwich. The number of enteric fever patients under treatment in the Metropolitan Asylums Hospitals was 62 at the end of last year, against 119 and 147 at the end of the two preceding years; 539 cases were admitted during the year, against 768 and 708 in the two preceding years. The greatest proportional prevalence of erysipelas occurred in St. Marylebone, Hackney, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Bermondsey, and Deptford. The 287 cases of puerperal fever notified during the year included 34 which belonged to Fulham, 26 to Wandsworth, 16 to Lambeth, 15 to St. Pancras, and 15 to Hackney. Of the 111 cases notified as cerebro-spinal meningitis, 14 belonged to Lambeth, 8 to Poplar, and 6 each to St. Marylebone, St. Pancras, and Hackney.

During the past year 67,632 deaths of persons belonging to London were registered, being in the proportion of 14·0 deaths per 1000 persons living; in the three preceding years the death-rates were 15·1, 14·6, and 13·8 per 1000, the average for the ten years 1899-1908 being 16·3 per 1000. Among the several boroughs the lowest death-rates last year were 8·9 in Hampstead, 10·3 in Lewisham, 11·3 in Stoke Newington, 11·9 in Wandsworth and in Woolwich, and 12·0 in Fulham; the highest rates were 16·8 in Southwark and in Bethnal Green, 18·8 in Bermondsey, 19·0 in Shoreditch, 19·2 in Finsbury, and 20·3 in the City of London. In the western group of boroughs the mean rate was 13·2, in the northern 13·4, in the southern 13·5, in the eastern 16·4, and in the central 18·2 per 1000. The 67,632 deaths from all causes included 6285 which were referred to the principal infectious diseases; of these, 2 resulted from small-pox, 2324 from measles, 383 from scarlet fever, 605 from diphtheria, 1246 from whooping-cough, 146 from enteric fever, 2 from ill-defined pyrexia, and 1577 from diarrhœa, but not any from typhus fever. These 6285 deaths were equal to a rate of 1·31 per 1000, the rates from the same diseases in the three preceding years having been 1·93, 1·42, and 1·35 per 1000. The death-rates last year from these principal infectious diseases ranged from 0·52 in Hampstead, 0·58 in Lewisham, 0·63 in the City of Westminster and in Stoke Newington, 0·72 in the City of London, and 0·83 in St. Marylebone, to 1·67 in Hammersmith and in Southwark, 1·68 in Stepney, 1·99 in Bethnal Green, 2·36 in Finsbury, 2·37 in Poplar, 2·74 in Bermondsey, and 2·87 in Shoreditch. The 2324 deaths from measles were 466 in excess of the corrected average number for the five preceding years; this disease was proportionally most fatal in Hammersmith, Finsbury, Shoreditch, Poplar, Stepney, and Bermondsey. The 383

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING THE YEAR 1909.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1909.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON...	4,833,938	21	17,251	6685	7	1042	20	287	4194	111	29,618	6·1	2	2324	383	605	1246	—	146	2	1577	6285	1·3	67,632	14·0	107
West Districts.																										
Paddington	151,955	—	630	184	—	29	—	3	106	4	956	6·3	—	36	14	10	36	—	4	—	36	136	0·9	1956	12·9	108
Kensington	183,683	—	420	177	—	48	—	7	135	4	791	4·3	—	58	9	19	40	—	8	—	49	183	1·0	2440	13·3	119
Hammersmith	125,704	—	389	192	—	16	—	14	76	1	688	5·5	—	80	11	23	47	—	5	—	44	210	1·7	1791	14·3	125
Fulham	176,406	—	511	322	—	41	1	34	115	3	1027	5·8	—	74	10	40	49	—	4	—	99	276	1·6	2113	12·0	111
Chelsea	75,249	—	307	98	—	12	2	1	40	—	460	6·1	—	24	6	15	13	—	2	—	15	75	1·0	1084	14·4	114
City of Westminster	168,883	1	590	225	—	25	—	5	102	3	951	5·6	1	25	18	18	19	—	7	—	16	104	0·6	2212	13·1	103
North Districts.																										
St. Marylebone	126,027	—	458	113	—	21	—	3	134	6	735	5·8	—	33	8	9	25	—	1	—	29	105	0·8	1836	14·6	64
Hampstead	94,185	—	259	47	—	16	—	5	30	4	361	3·8	—	14	4	5	18	—	5	—	4	50	0·5	839	8·9	77
St. Pancras	237,422	1	771	320	—	50	—	15	155	6	1318	5·6	—	105	17	27	30	—	6	—	45	230	1·0	3510	14·8	109
Islington	351,202	3	1284	432	1	94	—	14	221	11	2060	5·9	—	199	26	30	86	—	13	—	69	423	1·2	4913	14 0	105
Stoke Newington	54,423	—	110	28	—	11	—	4	27	—	180	3·3	—	10	3	2	14	—	1	—	4	34	0·6	612	11·3	82
Hackney	237,601	1	784	264	—	59	1	15	271	6	1401	5·9	—	57	10	19	51	—	6	—	77	220	0·9	2988	12·6	98
Central Districts.																										
Holborn	53,802	1	97	47	—	16	1	3	41	—	206	3·8	—	14	3	3	15	—	1	—	9	45	0·8	836	15·6	70
Finsbury	96,289	—	240	167	1	13	—	5	132	3	561	5·9	—	85	11	14	51	—	3	—	60	224	2·4	1829	19·2	108
City of London	18,193	1	38	19	—	4	—	1	10	—	73	4·0	—	6	—	—	4	—	1	—	2	13	0·7	368	20·3	117
East Districts.																										
Shoreditch	114,802	—	341	186	—	50	—	14	144	2	737	6·4	—	130	9	22	72	—	6	—	89	328	2·9	2178	19·0	146
Bethnal Green	131,316	1	566	184	—	33	—	7	164	5	960	7·3	—	79	25	17	40	—	4	—	95	260	2·0	2201	16·8	134
Stepney	312,525	8	1038	583	2	71	2	13	487	4	2208	7·1	1	236	26	51	69	—	6	—	137	526	1·7	4759	15·3	115
Poplar	171,965	—	733	213	—	54	—	13	177	8	1198	7·0	—	156	23	20	84	—	13	—	109	405	2·4	2767	16·3	133
South Districts.																										
Southwark	211,125	2	590	256	—	35	1	6	224	5	1119	5·3	—	127	14	33	57	—	6	—	113	350	1·7	3528	16·8	124
Bermondsey	127,569	—	458	198	3	30	—	7	143	4	843	6·6	—	200	15	9	55	—	2	—	67	348	2·7	2388	18·8	140
Lambeth	324,188	—	1182	378	—	50	1	16	191	14	1832	5·7	—	104	27	58	85	—	9	1	103	387	1·2	4544	14·1	97
Battersea	186,036	—	723	288	—	54	—	14	156	4	1239	6·7	—	90	8	22	63	—	7	—	49	239	1·3	2416	13·0	112
Wandsworth	297,646	—	997	371	—	66	2	26	193	4	1659	5·6	—	111	14	27	69	—	6	1	58	286	1·0	3524	11·9	87
Camberwell	283,022	1	1017	379	—	47	—	14	234	4	1696	6·0	—	105	17	43	52	—	5	—	84	306	1·1	3776	13·4	102
Deptford	118,583	—	374	195	—	33	6	7	181	2	798	6·7	—	67	12	15	47	—	6	—	31	178	1·5	1611	13·6	104
Greenwich	111,014	—	390	163	—	30	1	8	95	4	691	6·2	—	38	9	7	20	—	4	—	36	114	1·0	1350	12·2	100
Lewisham	160,749	1	927	388	—	18	1	4	105	—	1444	9·0	—	6	15	21	20	—	2	—	29	93	0·6	1656	10·3	75
Woolwich...	133,374	—	1027	267	—	12	—	9	101	—	1416	10·6	—	55	19	26	15	—	3	—	19	137	1·0	1587	11·9	81
Port of London	—	—	—	1	—	4	1	—	4	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

fatal cases of scarlet fever were 155 fewer than the corrected average number; the greatest proportional mortality from this disease was recorded in the City of Westminster, Finsbury, Bethnal Green, Poplar, Bermondsey, and Woolwich. The 605 deaths from diphtheria showed a decline of 90 from the corrected average number; this disease was proportionally most fatal in Hammersmith, Fulham, Chelsea, Shoreditch, Lambeth, and Woolwich. The 1246 fatal cases of whooping cough were 179 below the corrected average number; the highest death-rates from this disease last year were recorded in Hammersmith, Finsbury, Shoreditch, Poplar, Bermondsey, and Deptford. The 148 deaths referred to "fever" were 105 fewer than the corrected average number; enteric fever was proportionally most fatal in Hampstead, Shoreditch, Poplar, and Deptford. The 1577 fatal cases of diarrhœa were less than half the corrected average number; the greatest proportional mortality from this disease was recorded in Fulham, Finsbury, Shoreditch, Bethnal Green, Poplar, Southwark, and Bermondsey. Of the 2 fatal cases of small-pox, 1 belonged to the City of Westminster and 1 to Stepney. In conclusion, it may be stated that the aggregate mortality in London last year from these principal infectious diseases was 22·9 per cent. below the average for the five preceding years.

Infant mortality, measured by the proportion of deaths among children under one year of age to registered births, was equal to 107 per 1000 last year, against 131, 116, and 113 in the three preceding years. The rates of infant mortality in the year under notice ranged from 64 in St. Marylebone, 70 in Holborn, 75 in Lewisham, 77 in Hampstead, 81 in Woolwich, and 82 in Stoke Newington, to 124 in Southwark, 125 in Hammersmith, 133 in Poplar, 134 in Bethnal Green, 140 in Bermondsey, and 146 in Shoreditch.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff-Surgeons: E. C. Sawdy to the *Jupiter*, and J. G. Watt to the *Sutlej*, both supernumerary. Surgeons: A. Davidson to the *Magnificent*, and G. C. Cross to the *Sutlej*, both supernumerary; A. Davidson to be transferred to the *Bulwark*.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Lieutenants are confirmed in that rank:—Gilbert G. Collet, Francis W. M. Cunningham, Harry R. Edwards, Rupert H. Nolan, William Mathieson, Gilbert H. Dive, Robert Gale, Alfred G. Jones, Kenneth Comyn, Arthur S. Cane, John M. Weddell, Charles M. Nicol, Arthur P. O'Connor, Thomas H. Dickson, Hugh G. Robertson, Herbert V. Stanley, Philip C. Field, Ronald M. Davies, Richard C. G. M. Kinkead, and Edward C. Stoney.

Lieutenant-Colonel J. J. Gerrard, who on return from Malta was appointed Medical Inspector of Recruits, Northern Command, has been selected as Deputy Director of Medical Services, Lines of Communication Staff, for an administrative staff ride to be held during March in the vicinity of Stockton-on-Tees. Lieutenant-Colonel J. M. Reid has arrived home from Hong-Kong, and Lieutenant-Colonel C. Birt from Malta. Lieutenant-Colonel J. M. Reid has been appointed Senior Medical Officer, London Recruiting District. Major B. H. Scott has been transferred from the Scottish Command to the London District for duty at the War Office. Lieutenant-Colonel R. J. D. Hackett, Lieutenant-Colonel S. E. Duncan, Major J. F. Kelly, and Captain H. M. Morton have embarked for a tour of service in South Africa and Lieutenant H. S. Dickson for Gibraltar.

Supernumerary Lieutenant Charles T. V. Benson, from the Seconded List, is restored to the establishment (dated Jan. 30th, 1910).

INDIAN MEDICAL SERVICE.

The King has approved of the retirement of the following officers, with effect from the dates indicated:—Surgeon-General Sir Gerald Bomford, K.C.I.E. (dated Jan. 1st, 1910). Lieutenant-Colonel Thomas Richard Mulroney (dated August 13th, 1909). Lieutenant-Colonel John Leopold Poynder (dated Dec. 12th, 1909). Lieutenant-Colonel William George Patrick Alpin (dated Jan. 6th, 1910).

The King has approved of the removal to the Temporary Half-pay List of Captain Arthur Falconer Hayden (dated Jan. 23rd, 1910).

His Excellency the Viceroy of India has selected Lieutenant-Colonel C. J. Bamber, Sanitary Commissioner of the Punjab, for the appointment of Inspector-General of Civil Hospitals in the Punjab, in succession to Colonel T. E. L. Bate, who will complete his tour of service in July. Lieutenant-Colonel C. C. Manifold, Civil Surgeon in the United Provinces, has been appointed to officiate as Inspector-General of Civil Hospitals in the United Provinces, with the reversion of the appointment, in succession to Colonel R. D. Murray, who retires on March 29th. The services of Lieutenant-Colonel G. W. P. Dennys, Agency Surgeon, have been placed at the disposal of the Commander-in-Chief and he has been posted to the North-West Frontier Province. On return from military duty Lieutenant-Colonel A. L. Duke has been appointed Civil Surgeon of Peshawar. The services of Captain R. Steen have been permanently placed at the disposal of the Government of the United Provinces. Captain T. G. N. Stokes has been appointed Sanitary Commissioner to the Central Provinces. The services of Lieutenant S. B. Mehta have been placed at the disposal of the Commander-in-Chief. Captain H. A. Mackenzie has been granted privilege leave for one month, Captain H. Falk leave for one year, and Captain Fayrer leave for six months.

TERRITORIAL FORCE.

Royal Army Medical Corps.

3rd East Anglian Field Ambulance: Captain Josiah Oldfield to be Major (dated Jan. 6th, 1910).

1st West Lancashire Field Ambulance: The appointment of Captain Arthur J. Evans is antedated to July 14th, 1909.

3rd North Midland Field Ambulance: Ernest William Strange to be Lieutenant (dated Dec. 24th, 1909).

Attached to Units other than Medical Units.—Lieutenant James G. Miller to be Captain (dated Nov. 17th, 1909).

FIRST WESTERN GENERAL HOSPITAL: WEST LANCASHIRE DIVISION.

The annual dinner and concert of the *personnel* of the General Hospital took place in Liverpool on Feb. 10th, Lieutenant-Colonel Nathan Raw, commanding officer, being in the chair. There were present, among other officers, Colonel Richard Caton, Colonel Damer Harrisson, Lieutenant-Colonel Rushton Parker, Lieutenant-Colonel T. R. Glynn, Major Burns Gemmell (Registrar), Mr. Naldrett (Q.M.), Lieutenant-Colonel Knowles, O.C. 1st Field Ambulance, Lieutenant-Colonel Dawson, 2nd Field Ambulance, Lieutenant-Colonel Jackson, 3rd Field Ambulance, Major Barrow, R.A.M.C., Major Smart, Captain Evans, and Major Stevenson. Miss Glover, the principal matron, Miss Purves and Miss Oates (matrons), together with 81 sisters and nurses attached to the hospital, were also present. The total company numbered 176. After the loyal toasts had been proposed, the commanding officer reported that the hospital was recruited in all departments up to full strength—namely, 31 physicians and surgeons, 120 nurses, and 47 non-commissioned officers and men. The fact of so many nurses being present in uniform gave great brightness to the proceedings, and it is worthy of note that it is the first occasion in which hospital nurses have taken part in an official military function in Liverpool.

THE RED CROSS SOCIETY.

At a meeting held at Shrewsbury last week under the presidency of the Earl of Powis, Lord Lieutenant of the county, a scheme was drawn up for the organisation of voluntary aid for the sick and wounded in time of war. The county committee will consist of Lord Powis, Colonel Yate, Colonel Cureton, Colonel Cholmondeley, Colonel Lloyd, Major Lloyd, and also representatives of the sub-districts. Colonel Yate, who for many years was organising secretary of the Red Cross Society in India, was appointed county director of the scheme. Major-General Lloyd, commanding the Welsh Division, stated he knew that Mr. Haldane was peculiarly grateful to the country gentlemen of England for the way in which, irrespective of party, business, or pleasure, they had "put their backs" into his great scheme.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The first article in the February issue of the *Journal of the Royal Army Medical Corps* is a joint communication by

Colonel Sir David Bruce, F.R.S., Captain A. E. Hamerton, D.S.O., R.A.M.C., Captain H. R. Bateman, R.A.M.C., and Captain E. P. Mackie, I.M.S., on the Development of Trypanosoma Gambiense in Glossina Palpalis. The communication, which is reprinted from the Proceedings of the Royal Society, is illustrated with a coloured plate. Lieutenant-Colonel C. Birt, R.A.M.C., discusses Phlebotomus Fever in Malta and Crete, and Captain T. H. Gibbon, R.A.M.C., gives the results of 140 cases in which Fleming's method of serum diagnosis in syphilis has been used. He concludes that: (1) The diagnosis of syphilis can readily be made by means of a reaction in which rabbit's heart extract, sheep's red blood corpuscles, and the suspected serum alone are employed; (2) 80 per cent. of cases of syphilis diagnosed clinically have given positive results; (3) in 100 per cent. of non-syphilitic blood examinations the result has been negative; and (4) the reaction has not appeared in the blood of some of those patients who have undergone a prolonged course of mercurial treatment. Lieutenant-Colonel Simpson, C.M.G., continues his medical history of the South African war.

THE ROYAL NAVY LIST.

This quarterly has now reached its 129th issue and maintains its usefulness both by the amount of information which it contains and by its facility for reference. An important feature of the handbook is the alphabetical list of war services which embraces the details of the careers of 14,500 active and retired officers. There are also lists of the ships in commission and ships in the course of building and an article on the current history of the Royal Navy, as well as an extremely useful bibliography of naval literature. For everyone interested in the Royal Navy this handbook is indispensable.

Correspondence.

"Audi alteram partem."

ENTERIC FEVER IN INFANCY.

To the Editor of THE LANCET.

SIR,—I am glad to note the correspondence in your columns on this subject, for it is one of more than individual importance. From the public health point of view the matter deserves special consideration. There is no doubt that typhoid fever is often overlooked in young children. In the past (when I was a district medical officer of health) I have more than once, on having a case of typhoid fever notified to me, ascertained on inquiring into the matter that several children in the house had, for some weeks previously, been suffering from illness which had not been recognised as typhoid fever. However, official inquiry revealed that one child after another had failed at intervals of ten days or so, and the Widal test subsequently applied was in each case positive.

In an infant the disease is still more likely to be overlooked, particularly amongst the very poor who cannot afford to have a child under daily observation. In any case the clinical symptoms are often anomalous, and I am of opinion that infected infants not infrequently form a link in a chain easily recognisable when the evidence is assiduously sought and scrutinised. The following series of cases taken from page 47 of my Annual Report on the Health of the Borough of Southend-on-Sea for the year 1906 may prove of interest and illustrates this instructive point.

The primary case of what proved, to my view, to be a series, was a female, aged 21 years, who ate "cockles" of unknown origin obtained from an itinerant vendor. A fortnight later she began to be ill; unfortunately, the illness was not recognised or notified as typhoid fever until a late period of the disease. Two secondary cases occurred in the same house through two children occupying the same bed as the "cockle" patient, and then all three cases were recognised and notified. The special point of interest is in what I consider to be two further secondary cases *in another house* a few doors off. Only the second of these cases was notified, because the first (an infant) was not recognised as typhoid fever or even suspected until I made official inquiry. On preliminary inquiry by the sanitary inspector into the case notified in the second house the connexion between the two houses was not apparent, there having been no direct contact between the patient (a boy, 15 years of age) and the cases in the other house; but through the death returns which I obtained weekly from the local registrar I ascertained that there had been a previous *infant* death in the second house. This seemed to me a likely clue, and on pursuing it I was enabled to fit in the connexion between the cases in the two houses in the way of cause and effect. Briefly, I found that a baby had died in the second house about three weeks after the commencement of illness in the first house. The stated cause of death in the registrar's return (though medically certified) was that most unsatisfactory term "convulsions." (Convulsions being merely a symptom should never be given as a *cause* of death, but this is by the way.)

I now personally made close inquiry into this infant's death and ascertained that she had exhibited marked abdominal symptoms with fever and diarrhœa. I further ascertained that this infant before its illness had been taken into the first house and had been nursed by the first patient of all after she began to be ill, but before her illness had been diagnosed or notified. The infant began to be ill about a fortnight later, and after she had been ill about a week she died in a "convulsion." But during this week of illness she was frequently nursed by the boy aged 15, who had never been in the first house, but who himself developed typhoid fever about a fortnight after the infant's illness and death.

As nearly three weeks had elapsed since the infant's burial before the youth's illness was notified to me, I was unable to verify what I believe to be a justifiable conclusion that in this infant's illness was to be found a "missed" or unrecognised attack of typhoid fever which amply explained the origin of the infection which laid the boy of 15 low and completed the chain of connexion between the cases in the two houses.

I am, Sir, yours faithfully,

J. T. C. NASH,
County Medical Officer of Health of Norfolk.

Norwich, Feb. 11th, 1910.

THE VACCINE TREATMENT OF PERIODONTAL DISEASE.

To the Editor of THE LANCET.

SIR,—In your article the Vaccine Treatment of Periodontal Disease, in THE LANCET of Feb. 12th, you say that "up to the present ..... no observations on the treatment of pyorrhœa by vaccines alone have been recorded. Nor has it been shown by the comparison of a number of cases that the use of vaccines either hastens the cure of periodontal disease or renders it possible to cure cases which are not amenable to local treatment alone."

Referring to the first statement, we would like to draw your attention to the fact that in the series of cases recorded by us before the Royal Society of Medicine more than 50 per cent. were treated by vaccines alone, unless indeed you consider removal of tartar from the teeth and the use of a mouth-wash as local treatment of such importance as to stultify the subsequent use of vaccine therapy. The local treatment that was carried out in our cases can only be compared with the removal of the necrotic centre of an anthrax pustule and the subsequent daily washing of the lesion with lotion.

Then in answer to the statement regarding a comparison between the results following the employment of vaccine and those where local treatment alone is adopted, we would refer you to three cases which had been subjected for many months to all the ordinary measures of local treatment short of extracting the teeth, without success. The teeth remained loose and suppuration persisted. On the employment of vaccines each of these cases showed rapid improvement, and after a few injections pus had disappeared and the teeth became firm. We therefore venture to claim that vaccine *does* hasten the cure of periodontal disease and render it possible to cure cases which are not amenable to local treatment alone.

We are, Sir, yours faithfully,

Feb. 14th, 1910. JNO. EYRE.
J. LEWIN PAYNE.

To the Editor of THE LANCET.

SIR,—May I be permitted to offer a few words of criticism upon two points of your excellent leading article on the Treatment of Periodontal Disease by Means of Vaccines?

Periodontal disease alone, unaccompanied by infection

of the alveolar process, is comparatively rare except when associated with simple gingivitis. Whenever the so-called periodontal disease has progressed to pus formation the bony sockets of the teeth are involved; the disease is then not one affecting the periodontal membrane alone, but bone as well: the "pocket" is a sinus often leading to bare bone. Local treatment, I presume, includes all manner of lavage, removal of deposits, retained discharges, or sinuses (pockets). But why vaccines should be required to do in the mouth what they are incapable of doing in any other part of the body (i.e., the removal of already dead matter) is difficult to see. Local treatment, such as common surgical remedies, must always go hand in hand with immunising methods.

I am, Sir, yours faithfully,

New Cavendish-st., W., Feb. 15th, 1910. KENNETH GOADBY.

CLAMPS IN GASTRO-ENTEROSTOMY.

To the Editor of THE LANCET.

SIR,—I have been much interested in the correspondence on this subject originated by Mr. Sinclair White's letter of Jan. 22nd. The possibility of post-operative hæmorrhage from the margins of a gastro-enterostomy wound is, I believe, present in the minds of most surgeons who use clamps in the performance of the operation. Mr. H. Upcott has pointed out that it is the inferior lip of the incision in the stomach (that which is sutured last) from which the arterial hæmorrhage is most likely to be severe, and that if the mucosa be everted, any hæmorrhage occurring on release of the clamps may be checked by an interrupted suture; if, however, Mr. Sinclair White's statement that the hæmorrhage in his case was from a vein be correct, this contention does not apply.

None of your correspondents has drawn attention to what appears to me to be the essential factor in the avoidance of hæmorrhage—viz., the character of the inner line of suture. This should be a continuous stitch, preferably of thread, and should include *all the coats* of the stomach and jejunum. The individual sutures should be closely placed and be drawn very tightly. Neither Mr. Sinclair White nor Mr. R. W. Murray states whether this was the kind of suture employed in their cases, and the issue would be clearer if information on this point were afforded. If the incision in the stomach be a transverse one close to the greater curvature the risk of hæmorrhage is obviously greater than if the stoma be made almost, or quite, vertical as in the "no-loop" operation.

Whilst the majority of surgeons will agree that the use of clamps is calculated to make the performance of the operation more speedy, accurate, and cleanly, the occurrence of accidents, such as those related, more than outweighs the advantages to be gained by their employment if such accidents cannot be prevented. The prevention of hæmorrhage in the operation with clamps is entirely dependent upon the inner suture; if this cannot confidently be made hæmostatic the larger vessels must be ligatured, but even then considerable reliance must be placed upon the suture for complete hæmostasis. The inner suture I am confident can be so placed as to be truly hæmostatic, and in this way the only objection to the use of clamps be overcome.

I am, Sir, yours faithfully,

Leeds, Feb. 12th, 1910. HAROLD COLLINSON.

To the Editor of THE LANCET.

SIR,—The advice of your correspondents who recommend that the use of clamps during gastro-enterostomy should be abandoned assumes that the inner suture cannot be made hæmostatic. This is contrary to my own experience and that, I believe, of many others. The lesson of hæmorrhage appears to me to be not the abandonment of clamps but the application of the inner row with the definite object of hæmostasis as well as approximation.

I am, Sir, yours faithfully,

Liverpool, Feb. 12th, 1910. K. W. MONSARRAT.

To the Editor of THE LANCET.

SIR,—There is an objection to the use of clamps which is important from the point of view of the anæsthetist as well as from that of the operator. I refer to the production of reflex cardiac depression, which I have noticed to occur instantly on their application, even when the patient has been thoroughly anæsthetised, and ether or C.E. employed. As the subject is usually in a feeble state it need hardly be said that anything which may have such effect should be avoided if possible.

I am, Sir, yours faithfully,

Feb. 12th, 1910. J. D. MORTIMER.

THE ROYAL SOCIETY OF MEDICINE.

To the Editor of THE LANCET.

SIR,—The Fellows of the Royal Society of Medicine met in good numbers on Wednesday, Feb. 2nd, to hear from their President an account of the steps which have been taken to obtain a new and enlarged house for the society. Much labour and anxiety have been undergone, and as a result there is now a prospect of an ample building, worthy of its purpose, that of housing the great and amalgamated institution which represents scientific medicine in its various branches and departments in the premier metropolis of the world.

This is indeed a high object, for which it is surely most fitting that we should unite our efforts and count it well to make some sacrifice that we may lay down for ourselves and for those who come after us the basis of an ever-growing academy of the medical sciences. I must confess to a little disappointment that the tone of the meeting was not more enthusiastic and that the wholesome criticism which every proposal should receive tended in some quarters to become carping and pessimistic. I hope that our profession at large will be touched by a sense of the greatness of the issues involved and will take long views of them, and that each of the Fellows and members of sections, now spread over a wide area, will respond to the appeal which has been sent out, and recognise that we are called upon in our own interest, as well as in that of the profession at large, to give our help, that the work of our society may go forward.

The generosity of the medical leaders of the past, of such as Harvey, Radcliffe, and Erasmus Wilson, is still, I hope, amongst us. But let those also whose means are only moderate give as they can, that none may be able to say that we failed in our day to take occasion by the hand.

I am, Sir, yours faithfully,

Wimpole-street, W., Feb. 13th, 1910. R. HINGSTON FOX.

FREE NEMATODES.

To the Editor of THE LANCET.

SIR,—In Sir Thomas Oliver's interesting lecture on "Ankylostomiasis," published in THE LANCET of Feb. 5th (p. 356), he says: "Cultivated soils swarm with active nematode forms of life, at first sight not unlike ankylostoma larvæ." It may interest some of your readers to know that in 1865 in the Transactions of the Linnean Society there was published a fully illustrated "Monograph on the Anguillulidæ or Free Nematodes: with Descriptions of 100 New Species"; while in the Philosophical Transactions for 1866 there is also a memoir by me "On the Anatomy and Physiology of Nematoids, Parasitic and Free," in which some important details will be found concerning the remarkable differences existing among different species in regard to their vitality and power of surviving prolonged desiccation. This power is the exception rather than the rule, as multitudes of the free nematodes are killed by even the briefest desiccation. Sir Thomas Oliver speaks of "larvæ in the rhabditic stage." This, I venture to think, should be an obsolete mode of expression, as it has now no real meaning.

I am, Sir, yours faithfully,

The Athenæum, Feb. 8th, 1910. H. CHARLTON BASTIAN.

A SCHEME FOR THE COÖRDINATION OF THE PUBLIC HEALTH SERVICE AND PATHOLOGICAL RESEARCH.

To the Editor of THE LANCET.

SIR,—I ask the publicity of THE LANCET to three impending developments which merit attention as affecting our future seriously. Among the recent activities of the medical department of the Local Government Board none is of more far-reaching importance than the appointment of a pathological investigator, who is also a medical inspector, and the establishment of a research laboratory and staff.[1]

[1] THE LANCET, Jan. 8th, 1910, p. 111.

The appreciation of the medical officers of health thereat is expressed in the January number of *Public Health*, and it is said to foreshadow, and the last Local Government Board report confirms, (*a*) a systematic, organised, and continuous research on pathological problems more immediately concerned with public health administration emanating from the Local Government Board; (*b*) inspection, organisation, and coördination of public health laboratories, their staffs, and their work throughout the country. Should not the general approbation of the profession be suitably expressed at such a movement?

In my several papers on Coördination in Public Health and Pathology and on a Public Health Ministry and Service, and at meetings at home and abroad, I have advocated this appointment from the distant obscurity of the provinces, realised and coveted its possession and possibilities. The concentration of public health in one independent department with extension of its organisation and activities is proceeding sanely and surely, and the ideal is clearly not that of a visionary. If we look abroad, too, we see that it is a true question of practical politics. Those bacteriologists who have worked for fever hospitals, as I have, will agree that innumerable subjects for research stare them in the face, but routine duties absorb their time; hence the value of a loan from the central department of a trained investigator to local authorities and isolation hospitals, together with some practical form of encouragement. In the sister services official "pats on the back" and promotion for quiet spade-work are valued highly, why not in public health? Cold-water treatment is a bit old-fashioned now.

The second development is the dawn of research for the general practitioner in the suggestion, which has considerable support behind it, that the British Medical Association should have its (inexpensive nucleus) research laboratory, in which its members and research scholars might work, without discouragement to existing laboratories or to local research of its branches or divisions. This means that scientific interests are being levelled up to medico-political ones.

The third development is concerned with the momentous changes which will occur in our ranks when the State adds diagnosis and treatment to prevention and inspection. With the absorption of the Poor-law service a pathological service is inevitable. Doubtless this will receive the full consideration of the joint committee of the British Medical Association and the Pathological Society of Great Britain and Ireland, which is taking evidence and recommending on the conditions of service and tenure of office of medical bacteriologists and pathologists attached to public bodies. Some representative elected annually to watch the interests of the scattered members of such special branches of medicine as pathology might be an innovation worthy of consideration of the British Medical Association. Mr. Sinclair White has suggested that the Beit memorial scholarships should be apportioned in the same manner as those of the British Medical Association and associated with a research laboratory for medical practitioners under the same administration.

I am, Sir, yours faithfully,

F. G. BUSHNELL.

Pathological Laboratory, Hove, Brighton, Feb. 5th, 1910.

THE "AUDIO": A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—Our attention has been called to an advertisement in certain papers of an apparatus called the "Audio," said to be designed for the electrical treatment of nerve deafness, and described as "combining in a simple form the treatment as applied at St. Bartholomew's Hospital."

We wish to disclaim all association with this apparatus and with the claims made for it. No such treatment is in use in the aural department of St. Bartholomew's Hospital. Some years ago trials were made of the effects of electrical treatment on various forms of deafness and were discontinued as being of no therapeutic value.

We are, Sir, yours truly,

C. ERNEST WEST,
Aural Surgeon to St. Bartholomew's Hospital;

SYDNEY SCOTT,
Assistant Aural Surgeon to St. Bartholomew's Hospital.

Queen Anne-street, W., Feb. 12th, 1910.

THE EARLY DIAGNOSIS OF CANCER OF THE STOMACH.

To the Editor of THE LANCET.

SIR,—In your issue of to-day Mr. C. Mansell Moullin reasserts what Mr. Moynihan has recently insisted upon, the large proportion of cases of gastric cancer which give a history indicating the previous existence of gastric ulcer. This large proportion is absolutely contrary to my experience as well as to that of many careful observers. No one would for a moment think of impugning either the good faith or the ability of these two gentlemen, but it is permissible to suspect that there is some fallacy in their reasoning. I believe there is, and that it arises from the fact that both being distinguished surgeons who have earned a special reputation in the domain of gastric surgery, the stomach cases which come their way largely consist of old and recent ulcer cases. If an ophthalmologist were to write a treatise on Bright's disease based on his own personal observation he would naturally assure us that albuminuric retinitis is an almost invariable accompaniment of nephritis.

Such startling statements as that gastric ulcer precedes gastric cancer in 54 per cent., in 72 per cent., and in 90 per cent. of the cases will not be accepted by thoughtful people until substantiated by observers who see all sorts of gastric cases with and without indications for operation, or by a collective investigation of such *unselected* cases by a number of such observers. Till the question is thus settled most men, I believe, will prefer to abide by an estimate so much more in consonance with general experience as Dr. W. S. Fenwick's—3 per cent.[1]—an estimate made with as full knowledge of modern methods of investigation as is possessed by anyone.

I am, Sir, yours faithfully,

Exeter, Feb. 12th, 1910. W. GORDON.

[1] Cancer and Tumours of the Stomach, p. 102.

DONATIONS AND BEQUESTS.—Mrs. Wood of Liverpool has given £5000 to the Royal Infirmary, Halifax. —The Union Assurance Society, Limited, has sent £500 to the treasurer of St. Bartholomew's Hospital in response to the special appeal issued by the Lord Mayor in October last. —Under the will of the late Mr. Henry Minson of Greenlanes, London, N., the Earlswood Asylum for Idiots, the Royal Hospital for Incurables, Putney Heath, the London Fever Hospital, the Metropolitan Hospital, Kingsland-road, N., the London Hospital, the Great Northern Central Hospital, and the Royal Sea Bathing Hospital, Margate, will each receive about £400.

DURHAM UNIVERSITY COLLEGE OF MEDICINE.—The annual meeting of the Court of Governors of the University of Durham College of Medicine was held in the College of Medicine, Newcastle-upon-Tyne, on Feb. 8th. The President of the College, Sir George Hare Philipson, was in the chair, and there were present the Duke of Northumberland, Lord Ravensworth, Dr. J. T. Merz, Principal Hadow, and others, besides representatives of the teaching staff of the College. The meeting was interesting in that it was the first one of the Court of Governors since the constitution of the College was formally changed last year (see THE LANCET, July 17th, 1909, p. 193). The report of the Council on the working during the past year was received and approved, showing as regards the number of students an increase over the average of the past five years. It was reported that Professor S. McBean had resigned the chair of materia medica and therapeutics, and that steps will shortly be taken by the Council to appoint his successor. In connexion with the dental section of the College a scheme of examination has been drawn up (after consultation with the staff of the Dental Hospital, Newcastle); this is following the agreement by the Senate of the University to grant a dental diploma. The need of this diploma, granted locally, has been felt for some time past, since students can carry out their whole curriculum in the hospital and College, but have had to go to London, Edinburgh, or Glasgow to sit for their examinations. It was further announced that application had been made to the Board of Education for recognition of the College as a technical institution and for a grant in aid.

THE PUBLIC HEALTH AND THE PARIS FLOODS.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Paris, Feb. 13th, 1910.

AT the Hôtel de Ville the authorities are so busy that it is no easy matter to find anyone who is free to talk quietly over the recent events, but I managed to obtain a good deal of interesting information. In the various offices occupied by functionaries who are responsible for some of the sanitary services the rush, the noise, and the crowds are immense. In the large courtyard of the Prefecture of Police there is an interesting confusion of strange objects. Here are rows of collapsible boats and carts with high wheels that rendered good service in maintaining communications in the streets when these were converted into canals, and barrels of all sorts of stores. The character of the crowd is also very different from what one usually sees, while the ordinary political police and the numerous detectives who keep order in the streets or endeavour to hold the criminal section of the community in check seem to have been brushed aside to make room for a totally different order of service. Broughams and motor cars arrive out of which jump men in frock coats, often with decorations in their button-holes. These are members of the professions concerned most directly in fighting the ravages of the floods—medical men, engineers, and architects. They all turn sharp to the left on entering, pass the municipal laboratory, and are lost in the stairs which at that corner of the vast building lead to the various offices devoted to the multiple sanitary services that depend on the Prefecture of Police.

Whether at the Hôtel de Ville or at the Prefecture of Police the floods have set much administrative machinery in motion which has been rusting in idleness for many a long year. Medical men who have never in their lives had occasion to go to either of these two great centres of local government have suddenly, and by reason of new and heavy responsibilities now thrown upon them, found it indispensable to see one or the other of certain functionaries able to give instructions or issue the materials needed in carrying relief to the victims of the floods. Everyone is working with a will, but the direction of the work seems sometimes a little vague, for to tell the truth everyone is a little in the dark what to do. So vast and far-reaching a flood is an unprecedented event—there are no lessons acquired in the past which can be utilised to-day. The flood of 1658, it is true, was as great a flood as that of to-day; but the one single practical lesson to be derived from it is that the preceding flood was quite as bad and yet it occurred only seven years previously. Consequently it would be extremely imprudent to imagine that we shall have to wait two and a half centuries before another flood of the same magnitude will occur again. On the contrary, past experience indicates that there may be another equally bad flood in a few years. Then, and besides the two great Paris floods of 1651 and 1658, there have been minor but very disastrous floods in 1740, 1802, 1807, and 1876. But the experience acquired during all these floods is of little or no use to us to-day, because the science of bacteriology has now taught us to combat dangers the existence of which was ignored when the previous great floods took place; besides, the complexities of civilisation have so increased that many more things in our daily life can now be put out of gear by a flood than could possibly be the case even in 1876. It is now felt that mere cleansing and drying do not suffice, but in many places rigorous disinfection is indispensable. Formerly Paris was a town almost exclusively of cesspools. There were but few sewers and they only drained away slop-water and rain-water. Now there are numerous sewers. Many of the houses have suppressed their cesspools and drain direct into these sewers which convey the sewage a long way into the country to various irrigation fields and sewage farms. A vast underground Paris has come into existence within the last half century and no one seems to have thought what would happen in this network of far-reaching subterranean thoroughfares if one of the greater floods recorded in history was to recur. No one could have believed that because a sewer burst on the southern side of the river, near the Chamber of Deputies, the escaped sewage would pass under the river by a railway tube and come bubbling up the steps of a railway station a mile away on the other and northern side of the river. Yet this is the explanation given of the inundations in front of the Gare St. Lazare, which is so familiar to the English visitors who come to Paris by the Dieppe or Havre routes. The proximity of tubes and main collecting sewers has brought about a new danger to health and life. At any moment a tube or an underground railway may be converted into a sewer. A flood, an earthquake, or simply a little jerry-building may produce such a catastrophe. Then, though we know how to clean and disinfect a room or a hospital ward, what experience have we in the purification of several miles of underground tunnelling?

Considering the new problems that arise it is perhaps fortunate the floods are subsiding slowly. Indeed, for the moment, they are not subsiding at all but rising again. This will give more time to plan proper measures. The need of time is all the greater, as there is no one supreme authority, but a multiplicity of departments, possessing different jurisdictions which have not even a common chief. Thus, if a private house is inundated, the Prefect of the Seine is responsible for the condition of the streets or dwellings. But if in that house there are tenants occupying furnished rooms then the matter falls under the jurisdiction of the Prefect of Police. If in the house there is a workshop or a restaurant, if a pastrycook, for example, or a baker works there, then the dwelling comes under the heading of an industrial building, for which there are special provisions according as the industries are wholesome or unwholesome. But supposing none of these conditions exist, and therefore the house is solely under the jurisdiction of the Prefect of the Seine, it suffices that one of the inhabitants should refuse to be vaccinated or should suffer from an infectious or contagious disease to bring the Prefect of Police on to the scene. The Prefect of the Seine performs many of the functions that would be the attributes of a mayor in a large English town, and he attends to the more purely local concerns of Paris or the small Department of the Seine, in which Paris is situated. The Prefect of Police, on the contrary, sees to the enforcement in Paris of the laws and regulations that apply not merely to Paris but to the entire country. As each prefecture is divided into numerous sub-departments, with their chiefs and sub-chiefs, many complications arise and much time may be lost in dealing with any situation. Thus, when a street is inundated, at the Prefecture of the Seine the Public Works Office and the Technical Service of Public Roads have to decide if the street is safe, and when the ordinary traffic may be resumed. The Sewers and Water-supply Departments see to the drains and mains in the streets, but it is the Direction of Architectural Works which deals by architectural inspectors with all that occurs within the houses, and is responsible for domestic hygiene. The Sewers Department sees to the soil-pipe within the house, the architect to the connexion outside between the house and the sewer; and as in many cases both are damaged by the floods the risk of confusion is great. Though it is the Prefect of Police who disinfects in case of transmissible disease, it is the Prefect of the Seine who disinfects if this is only desired from motives of cleanliness. Thus a child has a sore-throat. It may be merely a cold due to the dampness of the inundated house, but it may be the commencement of diphtheria. Therefore application must be made at the laboratory of Montsouris under the Prefecture of the Seine for a bacteriological diagnosis. If the result is negative, then the house remains under the Prefecture of the Seine, which has to disinfect, to provide any medical service or ambulance that may be thought necessary, because, though there may be illness, it is not an epidemic disease. But if the laboratory reports that it is a case of diphtheria then it is the Prefecture of Police which has to disinfect and provide medical services and ambulances. Thus two totally different and rival administrations are doing almost identically the same work side by side in the same streets, if not in the same houses. Obviously this must occasion unnecessary delay and work.

In the course of a week no less than 14,000 houses in Paris have been affected by the floods. In many cases it is only the cellars that have been invaded by the waters. In other localities the ground floors as well as the cellars have been completely under water. Never has there been so sudden, so widespread a catastrophe. But the worst feature of all

has scarcely been noticed. The *dépotoire* at Billancourt is flooded and inaccessible. Here it is that the contents of the cesspools, the moveable tubs, and the metallic pails which retained the solids while allowing the liquid contents to escape to the sewer are taken and emptied, treated chemically, and converted into manure. Thus the disposal of the night soil of thousands of houses is suddenly rendered impossible. Many cesspools are full to overflowing, must be emptied immediately, and yet what is to be done with their contents now that the main sewage works are inaccessible? As a matter of fact, some of the great tanks on wheels that are loaded with the crude, concentrated sewage extracted from the cesspools had to be emptied straight into the river. Everybody agrees that this is a most abominable thing to do, no one would be personally responsible for such an act; every person concerned loudly denounced the bare suggestion of such a proceeding, yet they all had to tacitly admit that there was no other way out of the difficulty.

With the tubs or pails, especially now that the waters have partially subsided, the matter was easy to manage. Sewage was conveyed to a neighbouring sewer mouth and there emptied. But soon the people who lived close by clamoured against the horrible odour arising from this operation, though it had been proposed that a sewer mouth separated by the Tuileries Gardens from inhabited houses should be selected for this purpose. As for the remainder, probably some of it will be emptied in the Seine, but lower down the river. It is this somewhat extensive mixing of sewage with the waters of the floods that constitutes one of the principal dangers of the situation. Perhaps, after all, what is thrown into the swollen river and in mid-current will not do any harm. It will be carried along with such rapidity and diluted with such enormous volumes of water that the process of natural purification should be both rapid and effective. But the water that enters the cellar of a house remains there. The walls prevent its racing forward to the sea and exclude the purifying wind and light. At best this water can only escape by slowly percolating into the soil beneath, and then it leaves a deposit of slime in the walls and floor—slime which may be mixed with fæcal matter due to broken soil-pipes or overflowing cesspools. It has been suggested that such water when in cellars should be mixed with a disinfectant, so that as it sinks into the soil or penetrates the porous walls it would take the purifying chemical with it. But who is to see to all this? Imagine 14,000 houses simultaneously in need of aid or at least of surveillance, for it would be most imprudent to trust to private individuals to do all the work without some experts to watch that it is properly done. One of the first questions I asked was how the disinfecting staff had been increased, but I was met with the disconcerting reply that it had not been increased. How could it be increased? Strangers could not be employed, not merely because they were lacking in the technical knowledge of the work that had to be done, but more particularly because they could not be trusted. The first comer cannot be introduced under the responsibility of the public authorities into private houses, where he might steal many things, unless he was known to be trustworthy.

Paris, Feb. 15th.

The position is improving because it has been decided that for the moment no attempt shall be made to empty the cesspools thoroughly, but that only two to three cubic metres shall be withdrawn. Then permission is given to empty a certain portion of the contents of the cesspools into the sewers within Paris instead of taking them all to the sewage works outside the city. The only sewage works accessible are at Aubervilliers, as these can be reached by the tank barges of the St. Martin canal. On the other hand, the sewage works on the island of Billancourt are inaccessible because the barges cannot pass under the bridges of the swollen river. The position is as follows. There are 80,000 houses in Paris and of these 45,000 drain direct into the sewers. For the remaining 35,000 houses there are 29,200 cesspools, 11,800 metallic *tinettes* or pails that only retain the solids, and 8300 tubs or pails that retain everything. The tubs and *tinettes* are removed, on an average, once a week. This is done in the daytime by carts and causes little or no nuisance. The cesspools are emptied into huge tanks by pneumatic suction, produced by a portable steam engine. In normal times about 150 cesspools are emptied every night. But the floods have disorganised this service, and the waters of the floods having penetrated many cesspools these need to be emptied at once. Thus from Sunday to Monday this week no less than 215 fresh applications were received from householders urgently demanding that their cesspools should be emptied. In that interval 295 cesspools were partially emptied; this, then, is a gain of 80 on the demand. But there remain 595 cesspools that have been neglected, and it will require another week to make up for these arrears. The state of affairs in the suburbs just outside Paris is far worse. Of the 14,000 houses which have been affected by the floods, presumably rather less than half have cesspools. Even when these were watertight the flood waters entered from above through the small hole made to lift the stone that constitutes the lid or entrance to the cesspool. These cesspools therefore are overflowing, and the great difficulty at present is to prevent the sewage contamination of the basement and cellars of the houses.

BRISTOL AND THE WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

Bristol Eye Hospital.

ON Feb. 3rd the Lord Mayor presided at the annual meeting of the Eye Hospital, held at the institution. During 1909 the in-patients numbered 441, and the out-patients 8628. The annual report, presented by Mr. Edmund King, showed that a balance of £1100 was due to the treasurer. The Lord Mayor called attention to the fact that a large number of outlying towns and villages sent patients to the hospital, and said that it would be well to ask for more contributions to the Hospital Sunday Fund from such places. Mr. F. Richardson Cross, in moving a vote of thanks to the Lord Mayor, remarked that ever since the hospital was founded the mayor or lord mayor had been a member of the committee, and spoke of the large number of former residents who were now acting as hospital ophthalmic surgeons in London and the large provincial towns. In June the hospital centenary is to be celebrated by a fête at the Zoological Gardens.

The Lord Mayor's Hospital Sunday Fund.

On Jan. 30th collections were made at the places of worship in Bristol and neighbourhood on behalf of the Hospital Fund. The accounts received up to last week reached a total of £582, about £28 more than at the corresponding date last year. The service at the cathedral on Sunday morning was attended by the Lord Mayor and Lady Mayoress, the Sheriff and Mrs. Riseley, four ex-lord mayors, and other members of the city council.

The Queen Victoria Jubilee Convalescent Home, Durdham Downs.

The annual meeting of the subscribers to this institution was held on Feb. 3rd. The medical report stated that during 1909 1847 patients had been admitted (1016 males and 831 females). Of these 1847 patients 611 were sent from the Royal Infirmary, while the General Hospital sent 652; 334 were free patients, 148 paying patients, and 68 came from the Bristol Dispensary, 17 from the Clifton Dispensary, and 17 from the Eye Hospital. The average daily number was 79, and the average stay 15¾ days. The financial statement showed the total income for the year was £3174, and the expenditure amounted to £2839.

The Bristol Naturalists' Society.

At the annual meeting of the Bristol Naturalists' Society which was recently held Mr. G. Munro Smith, L.R.C.P. Lond., M.R.C.S. Eng., was elected president for the ensuing year.

The Royal United Hospital, Bath.

The annual meeting of the subscribers of the Royal United Hospital, Bath, was held on Jan. 26th under the presidency of the mayor. The medical report stated that during 1909 the in-patients numbered 1385, against 1298 in 1908. 14,155 out-patients were treated, compared with 13,765 in the previous year. 279 patients were visited at their homes, an increase of 36 over the preceding 12 months. The financial statement showed that the income amounted to £6248 and that a deficit of £634 remained at the close of the year. The committee in the report state that "in October last Mr. T. D.

Ransford, the senior honorary surgeon, resigned his appointment after 27 years' service, to the regret not only of the managing board but also of all connected with the institution."

District Nursing Association for Exeter.

A meeting was held on Feb. 2nd, under the presidency of the mayor, to consider a scheme for the establishment of a district nursing association for the poor of Exeter, in conformity with the Queen Victoria Jubilee Institute for Nurses. There was a good attendance; amongst those present were a large number of the local medical men. The meeting unanimously decided that it was desirable such an association should be formed in Exeter, and it was also determined to shortly call a public meeting to bring the scheme before the citizens.

The Taunton and Somerset Hospital: The Centenary Year: The Abuse of Charity.

The annual meeting of the subscribers of the Taunton and Somerset Hospital was held on Feb. 10th. The financial statement showed a deficit of £744. The medical report was satisfactory. The President (the Hon. E. W. B. Portman) in his speech remarked that this was the centenary year of the hospital; the institution was founded in 1809, when the jubilee of the reign of George III. was celebrated. A certain Dr. Malachi Blake thought something of permanent value to the town should be done, and he called a public meeting. As a result a considerable sum of money was subscribed and the foundation-stone of the hospital was laid on April 11th, 1810. Dr. J. A. Macdonald said that the hospital was one of the most economically worked in the country, but he thought that 75 per cent. of the patients whom he saw there were not suitable candidates for hospital treatment as they could afford to pay a medical man.

Feb. 15th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Women and Residential Appointments at the Manchester Infirmary.

As one of the Manchester papers puts it, "the battle for the admission of women to residential posts at the Manchester Royal Infirmary has continued to rage during the current week," and will no doubt continue to rage for some time to come. Letters to the papers have been sent in shoals, pamphlets issued, and leading articles written. The advocates for the admission of women have some of them detracted from the sympathy felt for their cause by foolishly suggesting that subscriptions for the infirmary should cease or be cut down, showing that the cause of the women was in their minds more important than the good of the patients. However, the matter has been settled for a time by the motion carried on Friday last at a special meeting of the trustees held in the Mayor's parlour. Sir William Cobbett, chairman of the board of management, proposed the following motion: "That it is not desirable to appoint women to resident and surgical posts at the Manchester Royal Infirmary." Bishop Welldon seconded, and said "it embodied the unanimous feeling of the committee which inquired into the case for women," but also "the feeling which accorded with practically the universal custom of general hospitals to which medical schools were attached." He said the original claim was for complete equality with men in all cases, a demand which he felt it was the duty of the board unhesitatingly to resist, and in speaking of the structural changes that would be required said he thought it was a pity that the supporters of the women's claim had allowed the building of the new infirmary to proceed without first asserting their contentions. He urged that in a general hospital a woman doctor was not worth so much as a man in the treatment of general cases. After indicating the cases where the attention of women doctors would be undesirable, the Dean said that the natural delicacy and refinement of women were more precious to the community than the medical claims of women. Mr. J. E. Platt, chairman of the medical board, in supporting the motion, said the board was not absolutely unanimous on this question, but the great majority were opposed to the admission of women to resident posts, though they considered that they might be admitted to the gynæcological, ear, throat, and burns departments, provided that suitable accommodation could be found for them, which was not so simple a matter as had been supposed. Dr. E. S. Reynolds said the difficulty of having women resident doctors in all general wards was to his mind insuperable. He spoke of the sex difficulty, which some women doctors said did not exist in the profession of medicine. "It was incomprehensible that a medical woman should ever wish to be an attendant in a male ward. ..... The male patients did not want female residents, and the women were enormously in favour of male doctors." Several speakers were in favour of the claims of the women doctors, and some of them wished to postpone and refer the question back. Mr. C. P. Scott proposed as an amendment to add to the motion the words, "on the same terms as men," thus leaving it open for them to be admitted on some other terms. The amendment, having been seconded by Professor Herford, was put to the meeting and defeated, the original motion being carried by a large majority. Apart from the special question it would be unwise to carry this innovation out at present on account of the unknown expense it would involve, for the financial condition of the infirmary, both as regards the present and the future, is by no means free from anxiety.

The Manchester Ladies' Public Health Society.

The annual meeting of the Manchester Ladies' Public Health Society and Mothers' Guild was held recently, the Lord Mayor, Mr. Behrens, presiding over a large assembly. The report told of the increasing good work of the society in helping distressed cases in Manchester and Salford and in instructing and helping mothers in the poorest parts of the city. The institution does not give money, but gives help in the way of food, clothes, or milk. The Lord Mayor said that the society was doing part of the work of the corporation. Its health visitors were corporation officials, and the work done is under the supervision of the medical officers of health of Manchester and Salford. There is a happy combination of voluntary and paid help, as the lady visitors may be called honorary members of the staff. Mr. J. Howson Kay explained the means adopted by the society to familiarise poor mothers with the right methods to be used in the rearing of their children. He remarked that he would like to see a Chancellor of the Exchequer put a duty of 10*s.* a pound on tea, if only to prevent mothers giving it to their children, asserting no child under the age of six years should ever have either tea or coffee to drink. The Dean and the Mayor of Salford also spoke.

Feb. 15th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Referees.

THE Home Secretary has appointed Dr. A. Freeland Fergus and Dr. James Hinshelwood, both of Glasgow, to be medical referees under the Workmen's Compensation Act, 1906, with a view to their being employed in ophthalmic cases (including cases of miner's nystagmus) which may arise in the sheriffdoms of Lanark and Ayr respectively. The Secretary of State has also appointed Dr. Joshua Ferguson, of Paisley, to be one of the medical referees under the Workmen's Compensation Act, 1906, for the sheriffdom of Renfrew and Bute, and to be attached more particularly to the Paisley district, in place of Dr. Graham, deceased.

Scottish Poor-law Medical Officers' Association.

One of the advantages which medical practitioners derive from membership of a defence association is the obtaining of sound advice when they encounter legal or administrative difficulties. In the annual report of the Scottish Poor-law Medical Officers' Association, dealing with the events of the year 1909, several examples are given of cases in which such advice was applied for. In the first of these a Poor-law medical officer had signed certificates on which a person suffering from acute alcoholic insanity was removed to an asylum. In three days the patient was sufficiently recovered to be discharged, and then threatened the medical officer with an action-at-law for £1000 damages. The advice given in reply to an inquiry was that the medical man should inform the plaintiff's

law agents that he was instructed by the inspector of the parish council (*Anglice*, clerk to the guardians) to make the examination, and that the council must be communicated with. This occurred nearly 12 months ago and no further action seems to have been taken. In another case a parish council asked a medical officer if he would reduce his fees to private patients if his official salary were raised. This apparently illegal course of action was brought under the notice of the Local Government Board for Scotland, but with an unsatisfactory result. Another inquirer was informed that if formally requested by the inspector to do so he must attend old age pensioners as part of his official duties as parochial medical officer. A statement of various disabilities and other grounds of complaint connected with the Scottish Poor-law medical service was laid before the recent Royal Commission on Poor-law, and is appended to the Report. Here we find mentioned a grievance to which allusion has on several occasions been made in THE LANCET, namely, that outdoor medical officers may be dismissed by their parish councils without cause being assigned. Complaint is also made that for vaccination only a minimum fee of 1*s.* 6*d.* is paid irrespective of the distance which the vaccinator may have to travel in connexion with a case; that no extra fees are paid for the treatment of fractures or for midwifery; and that no provision is made for superannuation. On all these points the Royal Commission supported the views of the association, and the report adds that an endeavour must now be made to get the recommendations of the Royal Commission incorporated in any legislative proposal which may be brought before Parliament. The secretary of the association is Mr. William L. Muir, 1, Seton-terrace, Dennistoun, Glasgow.

Grantown Inspector of Poor and Medical Officer.

At a meeting of Cromdale parish council held on Feb. 9th letters were read from the Local Government Board bearing on the recent inquiry into a pauper's complaint of ill-treatment at the hands of the local inspector of poor. The first was addressed to the late chairman and stated that the inquiry had revealed the substantial truth of the charges made against the inspector by Dr. A. Hutchison, medical officer. In another letter Dr. Hutchison was informed that the Board "have severely censured the inspector for the manner in which he treated the pauper, a blind and helpless person, notwithstanding your repeated remonstrances. The Board commend your personal action in the case. You have performed a necessary public duty in bringing the inspector's conduct under the notice of the parish council."

Dundee Town Council and the Sanatorium.

The public health committee of the Dundee town council, at a meeting on Feb. 8th, discussed the question of the assistance to be given the infirmary directors in their project of carrying on the sanatorium. In a communication on the subject the infirmary directors indicated that they hoped to work the institution at an annual cost of £2500. Against this they had from Mr. Caird's gift £1000; interest on investments £650; and paying patients and subscriptions £300; leaving a deficit of about £550. To meet this shortage the directors asked the town council's assistance, and it was suggested that its help would best take the shape of a guarantee, extending over the period covered by Mr. Caird's gift, of a minimum of seven patients at 30*s.* per week, the patients to be recommended from the municipal dispensary and to be approved by the medical officers to be appointed by the infirmary directors, and also to be under the control and subject to the rules of the directors during treatment. Dr. C. Templeman stated that this was equivalent to an annual payment of £546. The Lord Provost moved that the committee recommend the town council to grant a sum equal to the expenses of the board of the patients to be sent to the sanatorium through the municipal dispensary. This motion was agreed to.

Criticism of Inverness Infirmary.

A somewhat animated discussion arose at a meeting of Inverness town council on Feb. 7th regarding the giving of a donation of £25 to the Northern Infirmary. Councillor MacEwen moved that the council postpone giving the donation until it was satisfied that adequate steps were taken by the directors to restore public confidence in the management of the infirmary. Provost Gossip regretted exceedingly the attitude taken up by Mr. MacEwen. Those who happened to know, who attended the weekly meetings, could testify that there was no better conducted institution of its kind than the Northern Infirmary. The infirmary would be a great deal better off if it were not for an outside coterie of philanthropists of a kind who were willing to jump upon the institution upon every occasion. If any critic could put his finger on any spot that was not sound in connexion with the institution he (the Provost) was prepared to give £100 to the funds. It was agreed to give the contribution.

Aberdeen Medical Appointments.

At a special meeting of the board of directors of the Aberdeen Royal Infirmary, held on Feb. 9th, Mr. George Herbert Colt, of London, was appointed an assistant surgeon. The status of physician was conferred on Dr. John F. Christie, at present assistant physician in charge of the department for diseases of the skin. At a meeting of the Aberdeen town council held on Feb. 7th, Dr. A. T. Gordon Beveridge was appointed police surgeon in room of Professor Matthew Hay, resigned. The Watching Committee recommended Dr. Beveridge, Dr. A. R. Laing, and Dr. David Rennet as a leet, and the first vote of the council on the three names resulted: Dr. Beveridge, 16; Dr. Rennet, 9; Dr. Laing, 7. The second vote curiously gave Dr. Beveridge and Dr. Rennet 16 votes each. The Lord Provost gave his casting vote in favour of Dr. Beveridge, who was accordingly appointed.

Feb. 15th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Belfast Milk-supply.

THE Local Government Board has sent a communication to the Hillsborough rural council to the effect that the corporation of Belfast has applied for powers of inspection and control of dairies in outside districts from which the milk-supply of that city is drawn. While the Board said that it would not be disposed to give effect to this application where the council of a rural district had shown itself willing to carry out the administration of the Dairies, Cowsheds, and Milkshops (Ireland) Order of 1908, it thought the occasion suitable for impressing on the council and inspecting officers the necessity of affording all possible protection to consumers of milk alike in Belfast and elsewhere. The council should therefore instruct its officers to be energetic in the inspection of cowsheds and dairies, and to report all insanitary conditions which might be found to exist in connexion with such premises. Extracts taken from a statement furnished by the officer of health of Belfast giving the results of a recent inspection of certain dairies in the Hillsborough rural district, from which portion of the milk-supply of Belfast is derived, were enclosed by the Local Government Board for the benefit of the rural council, which at its monthly meeting on Feb. 11th considered the matter, when its sanitary sub-officer said that the small farmers were the greatest offenders and it was very difficult to catch them. Their practice was to meet the Belfast milkmen on the road and deliver their milk to them. If they happened to be seen they ceased for two or three weeks, but he and the veterinary inspector hoped to have some of them before the council very soon.

The Ulster Medical Society.

At a meeting of the Ulster Medical Society held on Feb. 10th Mr. A. B. Mitchell opened a discussion on Appendicitis, advocating operation as soon as the diagnosis was made. The following took part in the debate: Dr. J. R. Davison, Dr. H. L. McKisack, Dr. A. Dempsey, Mr. Robert Campbell, Dr. John Campbell, Dr. J. S. Darling, Dr. R. G. M. Clements, Dr. John Rusk, Dr. C. Kevin, Dr. A. Montgomery, and Dr. G. Robb. The discussion showed marked divergence of view, the surgeons urging early operation, while the physicians did not see the necessity for this course, as some said they had never had a patient die from the disease, others related cases of patients who had one attack and no recurrence, and others thought operation was best done not during an acute attack but in a quiescent period.

Obituary: William Stewart, M.D. Glasg.

Dr. Stewart, one of the oldest medical practitioners in Ireland, died at his residence, Portadown, on Feb. 11th, at

the advanced age of 87 years. A native of County Tyrone, he studied, as so many Ulstermen did in his young days, in Glasgow, where he graduated M.D. in 1855, having in the year previous obtained the L.R.C.S. of Edinburgh. Shortly after graduating he settled down in practice in Portadown, where for many years he was dispensary medical officer and health superintendent. He had a large and lucrative practice and was a man of keen observation and of ripe experience. He was a leading member of the local Masonic organisation. Dr. Stewart was twice married, and one of his daughters is wife of a leading Belfast general practitioner, Dr. William Gibson, J.P. Dr. Stewart was buried in Portadown on Feb. 14th.

Medical Officer of Glenties, Co. Donegal.

Mr. W. J. O'Doherty, L.R.C.P. & S. Irel., was, on Feb. 12th, elected dispensary medical officer for the Carrick District of Co. Donegal.

Clonmel Asylum.

Further additions to the Clonmel Asylum are now in contemplation, although some £30,000 have already been spent in providing additional accommodation for patients in that institution.

Feb. 15th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Floods.

A WELCOME fall in the height of the Seine began a few days ago and little by little the flooded streets are resuming their normal appearance. They are not yet all of them open for traffic, for in many places they have either fallen in or threaten to do so; the basements also remain flooded in many parts of the city, and the heating arrangements, as well as the supply of electric light and gas, have not yet been everywhere made good. The meetings of several learned societies have been adjourned, but that of the Society of Medicine was held as usual. People shiver in the hospitals and in the large shops in consequence of the breakdown of the heating and lighting appliances; in the shops the assistants wear overcoats or mantles and the customers crowd together under some inadequate lamps, hastily improvised. All these discomforts, however, are borne with admirable patience because everyone feels that their end is at hand. The officially prescribed sanitary measures, details of which I gave in my last letter, have all been carried out, and at the present moment disinfection and disinfectors are to be seen everywhere. The water floods have been succeeded by floods of placards and circulars of disinfectors, and especially of business houses strongly recommending various systems of disinfection. The newspapers are full of advertisements on this subject. The conditions of medical life are resuming their ordinary course and the use of small boats in the streets is becoming less. Only the *banlieue* is still under water, but to a less extent than a few days ago; it is there that most damage has been done, small houses being either seriously injured or totally ruined, and many of those which the floods might have spared have suffered from the depredations of the criminal classes. The railway and tramway tracks are being gradually repaired. The unfortunate medical men can at last make their professional visits with less difficulty, but it is not yet possible to take back the patients to the hospitals which had to be vacated. Owing to the recent rains the Seine has risen to a slight extent, but this, it is to be hoped, is only temporary. It has already begun to give way, and no new devastation has occurred. Life is again taking its normal course, save in the unlucky *banlieu*, but the suburban hospitals have not yet been restored to working order. Memorable in the midst of the disasters are the admirable patience of the population, the immense extent of the charitable aid which was immediately forthcoming, and by which the worst difficulties of the situation were faced, and finally the fraternal spirit manifested universally without distinction of class, opinion, or rank. In the next place we have reason to be proud and thankful for the kindly and unanimous action of neighbouring nations, and even of some distant ones, who expressed their sympathy and sent financial support to assist us in this calamity.

Insanity Recognised as a Ground of Divorce.

A legal decision of interest from a medical point of view has just been delivered by the Fourth Chamber of the Civil Tribunal of the Seine. The question was whether insanity of a husband or wife would form a ground of divorce when this condition had existed before marriage but had been concealed from the other person. A woman who had been under treatment by professors of the Faculty of Nancy was married two years afterwards during a lucid interval in 1898, but a few weeks after the marriage she had to be sent to a lunatic asylum, where the medical officers declared her to be incurable. The court held that the wife's mental aberration previous to marriage had been concealed from the husband, that if he had known of it the marriage would not have taken place, and that a serious wrong had been done him. A divorce was therefore granted. Up to the present time insanity has never been recognised here as a ground of divorce, and it used to be said as a joke that this was for fear that all wives would say that their husbands were mad.

Mental Aberration in the Navy.

A circular on the subject of mental aberration in the navy has been recently sent by the Under-Secretary of State for the Navy to vice-admirals commanding-in-chief, to maritime prefects, to general officers, and to other officers of the higher ranks commanding at sea. After mention of the fact that mental diseases are particularly frequent in the navy as sequelæ of tropical diseases, insolation, paludism, and various toxic conditions met with abroad, the Under-Secretary points out the necessity of remedial measures. He will therefore appoint in the medical department of the navy lunacy experts who will remove from the fleet such men, whether *inscrits* or volunteers, as are the subject of mental defects, and will cause all men of actually unsound mind to be withdrawn from the service. Instruction in mental diseases with three months' attendance on the special clinical course of the Bordeaux Faculty of Medicine is therefore obligatory on all who are studying for the medical department of the navy. This instruction will be completed by a clinical and practical course at the École d'Application in Toulon, on leaving which the student must pass an examination and write a paper on a subject in psychological medicine. Appointments of specialists in neuro-psychiatry have also been made in the navy to the number of five for each of the principal hospitals of that service, and in addition there will be experts to advise councils of discipline and councils of war, and a special supervision of prisons. The medical examinations will be held in the ports; the candidates will write a paper on a subject connected with mental pathology, and their knowledge of neurology and psychiatry, as well as of the medico-legal and therapeutical applications of those branches of medicine, will be tested clinically.

Precautions against Industrial Lead Poisoning.

On the suggestion of the Minister of Labour the President of the Republic has issued a decree to the effect that in industrial establishments where the work involves danger of lead poisoning the employers, directors, or managers shall engage a medical man to examine the workpeople and shall pay his fees. No person may be employed on such work unless provided with a certificate from the medical man stating that he does not suffer either from lead poisoning or from any disease likely to be aggravated thereby. No person may be kept at such work if the certificate is not renewed once every three months. The employer must take care that the medical man examines every worker who either complains of indisposition due to his employment or is desirous of being medically examined. A special register, always available for reference and accessible to the inspector of labour, shall record for each worker the dates and duration of his absences from work on account of any indisposition whatever, the dates of the certificate giving the reason for such absences, notes of any medical treatment, the name of the practitioner in attendance, and the recommendations made by the medical man of the establishment. The decree will take effect three months after its publication.

Increase of Medical Fees.

For some months all the medical societies of the various districts of Paris have been considering the question of an increase in medical fees. Everything is becoming dearer. Rent

and official permits cost more than they used to do, and at the same time the mutual aid societies, the system of insurance against sickness, and the giving of free advice at the hospitals have materially reduced the incomes of practitioners. A general increase in fees was therefore decided on, and the practitioners of the Twelfth Arrondissement gave notice that after Jan. 1st, 1910, their charges would be raised by about one-third, the lowest rates being as follows: advice at a medical man's house during his usual consultation hours, 3 francs; visit to a patient on ordinary working days from 8 A.M. to 7 P.M., 4 francs; visit on Sundays and holidays from 8 A.M. to 12 noon, 4 francs; visit by request from 6 to 8 A.M. and from 7 to 10 P.M., 5 francs; day visit of urgency, 5 francs; day visit at a time specified by the patient, 5 francs; visit on Sundays and holidays from 12 noon to 7 P.M., 5 francs; night visit from 10 P.M. to 6 A.M., 10 francs. When several practitioners are summoned to an urgent case each is entitled to charge a fee. As hitherto, operations, examinations, and special treatment will be charged additional. The Practitioners' Society of the well-known health station, Chatel-Guyon, have adopted the following scale of charges. The fees for the special treatment of patients requiring attendance in their homes are fixed at a minimum of 100 francs for five visits or fewer. The fees for thermal treatment including the first examination, the arrangement of the introductory stage, and four consultations at the medical man's rooms are fixed at a minimum of 60 francs. For extra consultations at the medical man's rooms during his usual hours of attendance the minimum fee is 10 francs; for consultations at the patient's hotel or at the medical man's rooms by appointment the charge is 20 francs. For single visits or for making the introductory arrangements for a course of treatment the minimum charge is 20 francs. Urgent visits and night visits from 9 P.M. to 7 A.M. are charged double. These fees are payable for each patient under treatment. The system of fees at half rates is no longer in operation.

Feb. 15th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Upper Chamber.

SUDDENLY the Prime Minister has recommended to the King the names of 33 distinguished compatriots for Senatorial honours—a step not merely of local but also of outlying interest, particularly in countries like Great Britain, where the conflict between the two Houses, Upper and Lower, has raised the question as to whether the former is needed at all, or, if needed, whether its membership should be hereditary or elective. In Italy the aristocracy, with few exceptions, hold aloof from public life, the number of the really patrician families who court a political career being told off on the fingers of one hand. The young Italian kingdom, therefore, while averse from single-chamber parliaments, has had to choose the members of its Upper House from the general body of citizens, selecting by preference those of the Lower House who had shown an aptitude for affairs, and after these those of the public, professional or lay, whose special knowledge and experience made them a desirable adjunct to such an assembly. Quite an exceptional number of the latter have been men of medical training and achievement, insomuch that few, if any, names of the highest distinction in medicine, surgery, or hygiene, have failed to receive Senatorial rank. In practical working, the system has more than justified itself, and Italy owes much of her undoubted progress in sanitation and civic well-being to the counsels and enactments emanating from a professionally and, *par excellence*, a medically reinforced Senate.

The Senator Camillo Bozzolo.

Universal satisfaction has followed the accession of this eminent clinician and consultant to the Upper House, belonging, as he does, to the great subalpine school, whose centre, Turin, has already contributed to the State such men as Moleschott, Concato, Bizzozero, Lessona, Giacomini, and Lombroso—to mention only the dead. Born of a noble family in the province of Como on May 30th, 1845, he studied medicine at Pavia, joined, while still an undergraduate, the Garibaldian contingent in the war of independence, returned to the classes on the expulsion of the Austrians from Upper Italy, took the *summos in medicinâ honores* at his Alma Mater, and entered on clinical work at the Ospedale Maggiore of Milan. Transferred to the chair of medicine in Turin, he wrought a beneficent change in the methods of study and teaching, replaced the traditional reliance on books by early, steady, systematic observation at the bedside, and succeeded in making his pupils proficient in what Baccelli has called the physician's *prima cura*—diagnosis. As a preliminary to this he insisted on a thorough drilling in what the older English school called the "institutes of medicine," and was the first to found in Italy a chair of "propædeutica medica," the business of which was to train the perceptive and inductive powers by contact with the living reality, responsive to his watchword, "facta, non verba." His published writings are all in keeping with his professorial work and are esteemed by the busy practitioner accordingly. I need only mention such suggestive and serviceable treatises as his "Bagno Freddo e Raffredato nella Polmonite" (The Bath, Cold and Cooled Down, in Pneumonia); on "Pericardite Latente"; on "Necrosi del Pancreas"; and on "Febbri Criptogenetiche." In hospital administration he has been a pioneer and rehabilitator; while in public hygiene he has contributed to the solution of many vexed questions. Eleven years ago he opened the *medicus annus* of the subalpine school with the masterly prolusion entitled: "Influenza della Civilt à sulla Durata della Vita Umana" (The Influence of Civilisation on the Duration of Human Life), which brought him congratulations from the chief seats of learning in Europe and, locally, gave him a place on the communal council of Turin, where he sits as "assessore per l'igiene."

The Senator Tommaso De Amicis.

Another professor and consultant in the medical faculty is the above-named Neapolitan physician, who, born in 1838 in the province of Aquila, has held with much acceptance the chair of Dermosyphilopathy in the University of Naples. His promotion to Senatorial honours is recognised throughout the profession as a well-merited tribute to exceptional proficiency in his special department—proficiency not only signalised at the bedside and in the lecture-room, but also in numerous publications and contributions to the "Atti" of medico-chirurgical societies and congresses. He has translated the well-known treatise of Belhomme on "Véneriologie," supplementing it with notes and excursus of which it has been said, *la sauce vaut mieux que le poisson.*

The Senator Luigi Pastro.

This veteran, who takes his seat in the Upper Chamber in his eighty-eighth year, having been born at Treviso in 1822, had, like Camillo Bozzolo, to suspend a brilliant period of medical study to serve in the war of independence. In 1849 he was one of the heroic defenders of the Venetian Republic under Daniel Manin, after which he was involved in trial for high treason with many other compatriots at Mantua. Condemned to 18 years' imprisonment, he withstood the rigours of an Austrian State fortress, heavily ironed and sometimes bastinadoed for his refusal to betray his confederates, till 1856, when he entered the Sardinian army as surgeon and rose by rapid stages to ever higher grades on the medico-military staff till in 1884 he retired on a pension. During his professional career he did splendid work on the occasion of the cholera epidemics, which (especially that of 1884) numbered many victims throughout Italy, and even in his septuagenarian and octogenarian years he was called in consultation at many Italian centres—Florence, Venice, Milan, and Rome. Just four years ago he published his "Ricordi di Prigione" (Prison Recollections), which will bear and reward perusal even after the classic work on the same theme of Silvio Pellico, "Le Mie Prigioni."

Other men of science indirectly connected with medicine have also been elevated to the Senate, of whom it will suffice to mention Giacomo Ciamician, professor of biological chemistry in the University of Bologna, where his contributions to his special subject have won him honourable recognition from the leading scientific associations of Europe—Italian and Continental.

Feb. 5th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

An Unusual Case of Carcinoma of the Pharynx.

AT a recent meeting of the Gesellschaft der Aerzte Dr. Koschier showed a woman whom he has had under observation for nearly ten years suffering all the time from carcinoma of the naso-pharyngeal space. At present the neoplasm fills the entire nose and the back of the pharyngeal space; the nose itself is much thickened and the right eye is amaurotic from retrobulbar neuritis; some portions of the tumour are superficially ulcerated, but otherwise the patient makes little complaint of her condition, no pain at all having been experienced since the beginning of the disease. An operation had been refused when the neoplasm was small, and at the present time when an operation was hardly possible the patient was still not inclined to permit it. Repeated examinations by competent pathologists had confirmed the diagnosis. Dr. Koschier pointed out the fact that it was necessary to be very careful as regards the prognosis of tumours of this region, for this case, if operated upon even nine years ago, would have been made use of to swell the statistics of cancer-operability, whilst its malignity was so small that it is doubtful whether an operation would not have lessened the chances of the patient's survival.

Painless Childbirth.

At the same meeting Dr. Eisenberg read a paper giving the results of his attempts to make labour painless. He said that the scopolamin-morphia method was not advisable because of its dangers and the prolongation of the period of expulsion of the fœtus. He employed a partial chloroform anæsthesia produced by inhalation of the vapour from 10 or 15 drops of that substance on a piece of gauze, which was removed every two or three minutes and only used during the intervals between the contractions of the uterus. In this way the pain was brought down to a minimum without the woman's consciousness being affected, and the power of the uterine contractions was not diminished. This sort of chloroform anæsthesia could be kept up for hours (in one case for 31 hours) without any harm whatever; it had been called "fractioned minimal narcosis," and at the surgical clinic of Dr. Schnitzler extensive operations had been done under it. A similar result might be obtained with ether, although its use is a little more difficult, because with it the induction of the slight but sufficient stage of narcosis requires more skill than with chloroform. Ether is perhaps even the better of the two, for chloroform has sometimes its dangers, as in the case of the idiosyncrasy, when a few drops may, it is said, prove fatal. The method which Dr. Eisenberg recommended is much used in France and some other countries.

Distribution of the Medical Profession in Austria.

The distribution of practitioners in Austria is, as everywhere, dictated by expectation rather than by actual need; it is, therefore, no wonder that in some districts medical men are relatively scarce. In a very interesting contribution to the *Klinische Wochenschrift* Professor Fraenkel mentions the difference of care taken by the State for the spiritual needs and for the bodily needs of the population. Whilst in every village there is a church, or at least a chapel, where a priest offers religious teaching and consolation to the peasantry, there are, on the other hand, many places inhabited by several hundreds of persons where medical help cannot be had, and from which it is a journey of several hours to reach the nearest medical man. In the cities the ratio of the medical men to the population is decidedly high, as, for instance, in Prague, where it is 1 to 300; in Vienna, where it is 1 to 750; and in Graz, where it is 1 to 560. In the country districts, however, there is an average of 1 medical practitioner to 2500 inhabitants, but with wide local variations, for in Galicia in the eastern part of the empire the proportion is 1 to 16,000, and in Görz in the south it is 1 to 17,000. If the districts are considered as regards their size it is found that the inner or central counties are better off. In Lower Austria, for instance, an area of about two square miles is provided with one medical man; in the north about eight square miles are expected to be served by one medical man, but in the southern coast districts there is only one medical man for a population distributed over 36 square miles. Naturally, such conditions must be explained by the inadequate remuneration of the public appointments or the unsatisfactory conditions of private practice. A few figures will be useful. In 1908 there were altogether in Austria proper, which has a population of 28,000,000, a total number of 12,070 doctors of medicine entitled to practise. Of these, 7510 held public appointments, of which 1800 were State appointments, 3910 were municipal appointments, and the remainder were in the service of other public corporations. The State appointments are whole-time appointments, no private practice being permitted; the rate of their remuneration is only moderate, and the other appointments are worth less in proportion. There is, therefore, little inducement for a young medical man to seek them. Various medical associations have repeatedly urged the public authorities to increase both the number of appointed practitioners and their remuneration in accordance with modern requirements as the only means of obtaining a sufficient influx of medical men into country practice.

Premiums for the Breast Nursing of Infants.

The establishment of the so-called Stillkassen (funds from which weekly payments are made to mothers nursing their infants at the breast) has had a very beneficial influence on the nutrition, and consequently on the welfare, of infants. In Vienna the enterprise is quite a private affair, but still it has been able to show that 210 women, who have been assisted in this manner, have not had a single death to lament amongst their infants. There is, however, one factor which must be improved, and that is the duration of breast-feeding amongst these assisted mothers. It is intended to raise the premium for each consecutive month, so as to induce longer nursing. At present the premium amounts to 21 kronen (about 1 guinea) per month. The number of primiparæ was 164, the rest had from two to five children each, and it is interesting to note that only 27 of the remaining multiparæ had suckled either their first or their subsequent infants, the others being induced to do so by the premium paid to them.

Feb. 14th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

The Federal Control of Serums and Vaccines.

MENTION has been made in this correspondence of the Government control of serums manufactured for sale in the United States. When this Federal law was adopted there was a large traffic in serums prepared by speculating firms, and the quality of the articles which they placed on the market was very variable. At the first inspection it was found that irresponsible persons were making and marketing biological products without sufficient care or knowledge to ensure safety and reliability. The law provides for a complete system of Governmental supervision over the establishments producing vaccines, viruses, serums, toxins, antitoxins, and analogous products. This surveillance consists of inspections, licences, and methods of control or check-testing in the Hygienic Laboratory of the Public Health Service at Washington. The law requires that each package of virus, serum, toxin, antitoxin, or other product be plainly marked with the proper name of the article contained therein; the name, address, and licence number of the manufacturer, and the date beyond which the contents cannot be expected beyond reasonable doubt to yield their specific results. Since the operation of the law a marked improvement has taken place in vaccine virus; standards for measuring the strength of diphtheria and tetanus antitoxins have been established; both the diphtheria and tetanus antitoxins found on the market have a decidedly increased potency; weak serums are forbidden and those discovered have been withdrawn from the market; false or misleading labels have been changed, and in general the licensed manufacturers have reached a high state of efficiency. The result to the practising physician has been most satisfactory, for he is no longer liable to get negative results in the use of the serums on the market in any part of the United States.

Vaccine Virus in the Pharmacopœia.

Dr. M. J. Rosenau, Director of the Hygienic Laboratory of the United States Public Health Service, advises that

vaccine virus be admitted into the Pharmacopœia. He says that one of the first advantages, if this were done, would be to establish for it an official and legal name. This would tend to avoid much confusion now existing on account of the bacterial vaccines and other substances called "vaccine" used in the prevention and cure of disease. Formerly the term was limited to the vaccine in the prevention of small-pox, but in later times "vaccination" is a word used in a generic sense and includes the introduction of many different substances, in many different ways and for many different purposes. Authoritative directions in the Pharmacopœia would have an educational value and would help to prevent small-pox and to save life.

Feb. 2nd.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Plague.

PLAGUE returns for the week ending Jan. 1st show 7725 deaths, compared with 6559 in the week preceding. Bombay Presidency reported 545; Madras, 44; Bengal, 911; the United Provinces, 3582; the Punjab, 1308; Burma, 81; Central India, 41; the Central Provinces, 909; Rajputana, 215. Plague has appeared in a virulent form in the Saran district of Bengal, where 526 deaths occurred in a week.

Health of Bombay City during 1909.

The exceptionally favourable conditions which have been noted week by week represent in the aggregate a saving of 3393 lives during the year, as compared with the mortality of 1908. Small-pox has accounted for 553 fewer deaths, and plague for 161 fewer. The toll of cholera, unfortunately, was 632 higher than in the previous year, for which we have to thank the constant importations from Nasik and other pilgrimage centres. But the total number of deaths has fallen from 38,271 to 34,878 and the death-rate from 39·13 to 35·66. If we deduct plague from the latter figure the death-rate becomes only 29·0, a figure which compares favourably with that of many a European city. It is the lowest rate which has appeared on the Bombay registers for the last 12 years. During last week the total deaths numbered 603, approximately the same as during the previous four weeks. Small-pox is disappearing as the result of the prompt measures which the Health Department took to stamp out the epidemic in Mahim, and plague deaths are again only 5. The corrected death-rate, therefore, is only 31·58, and there is every sign that the present highly favourable conditions will continue.

Treatment of Leprosy in Burma.

As a result of the recent visit of Colonel C. P. Lukis, Director-General, I.M.S., to Rangoon, permission has been accorded by the Government of India to Major E. R. Rost, I.M.S., civil surgeon, General Hospital, to proceed with the special treatment of leprosy cases at Rangoon Leper Asylum, Kemmendine, which had been stopped.

Vaccination in the Punjab.

In the Punjab vaccination is carried out by Government officials without any friction between the vaccination staff and the villagers. In an official report recently issued it is stated that a small provincial decrease in the total number of vaccinations is traced to the havoc caused by the epidemic of malaria and its consequent ill effect upon the infantile population. The fact that there was a decrease of 10·43 per cent. in the total number of children available for vaccination with an increase of 4·76 per cent. for the year in the ratio of successful primary operations to the total number of children is given as an indication of the vaccination staff having worked satisfactorily. The experimental introduction of house-to-house vaccination in a few places is suggested as an improvement, since its success in popularising vaccination is undoubted, and there seems no reason why it should not prove successful. Vaccinators in the province are now provided with vaccine direct from the Punjab Vaccine Institute, and time is not lost in vaccinating calves in the districts. The time saved by this substitution might, it is thought, be spent by the vaccinators in going to the houses where the birth registers show that there are children to be vaccinated. This is also suggested as a good method for the distribution of quinine. Though the suggestion may meet with opposition from some of the native vaccination staff, it is not improbable that the people will welcome a measure that will save them from the exertion and annoyance of taking their children to a distance, and the scheme seems to have much to commend it. The increase in the total number of operations in Eastern Bengal and Assam over the previous year is 91,014, a figure which is by no means discouraging when the various sources of opposition are taken into consideration, while the slight decrease in the Punjab, adequately explained by the cause indicated, gives evidence of no unsatisfactory results.

Lunatic Asylums in Bengal.

A central asylum for natives is to be built at Ranchi at a cost of nearly 18½ lakhs of rupees. Detailed plans are being prepared, the approval of the Government of India having been received last cold weather. It is also intended to establish a central asylum for Europeans at Ranchi in place of that at Bhowanipur, Calcutta, a revised scheme being under the consideration of the local government. Both these asylums will be on the villa-colony system, a great advance on all similar institutions in the East. As the environment of some of the existing asylums is officially reported as unhealthy, the changes that are to be made in location should give the best results in respect of curative treatment. There are, on an average, about 850 lunatics under confinement in Bengal.

The Pasteur Institute at Kasauli.

I learn with gratification that His Highness the Maharaja of Benares has offered Rs.10,000 towards the construction of quarters for Indians—especially of the indigent classes—at the Pasteur Institute at Kasauli. This generous contribution coming after that given by the Maharaja of Patiala makes up half of the total sum asked for by the management of the Institute, so that there can be no doubt that the remainder will be readily forthcoming. The way in which the beneficent work of the Pasteur Institute has established its hold upon the minds of all olasses in India, in spite of all the scandalous attempts of the antivivisectionists and antivaccinationists to rouse up Indian prejudices of religion and caste against it, is one of those decisive victories for truth and light of which one does not see too many in this imperfect world.

The Health of the Viceroy of India.

Certain reports have obtained currency as to His Excellency the Viceroy's health and the possibility of his resignation. These, the *Allahabad Pioneer* states, are quite unfounded, for His Excellency, since his sharp though short attack of fever at Barrackpore, has steadily improved in health. His appearance at the recent State ball gave a contradiction to the rumours, as he plainly enjoyed the dance and was present until a late hour. Lord Minto has had a heavy burden of work lately, and still more lies before him, but he seems fully capable of meeting the demands upon his strength.

Jan. 8th.

Obituary.

HAROLD JAMES CROMPTON, M.D., B.CH. VICT., D.P.H.

To the very great regret of his friends there died on Jan. 28th, after a week's illness, Dr. Harold James Crompton, one of the medical officers of the County Asylum, Prestwich, Manchester, at the age of 37 years. After leaving school he spent three years in Paris studying chemistry, whence he proceeded to Manchester to begin his medical education. In 1894 he was awarded the medal in materia medica at Owens College, and the Society of Apothecaries' gold medal in materia medica and pharmaceutical chemistry. He took his M.B., Ch.B. with honours in 1898. In 1903 he obtained his M.D., with commendation, for his research into the pharmacology of selenium, tellurium, and arsenic. Afterwards he obtained the Diploma in Public Health. After qualifying he became house physician at the Manchester Royal Infirmary, where he later served as resident medical officer. He acted as house surgeon at Ancoats Hospital and as resident medical officer at the Barnes Convalescent Hospital, Cheadle. His last years were spent in work at the Prestwich Asylum. Highly efficient as a physician and a capable administrator, he was a man of wide culture, being especially well read in both English and French literature, and having

an extraordinary acquaintance with classical and modern music, which he combined with an enthusiasm for golf. Witty himself and quick to see humour, he loved to observe men and manners. Always reserved, always true, always large-hearted and generous, he made as many friends as he wanted, who will not cease to deplore his untimely death.

RICHARD GEORGE WORGER, L.R.C.P. LOND., M.R.C.S. ENG., L.M.S.S.A.

Mr. R. G. Worger died at his residence, Leigh House, Radstock, Somerset, on Feb. 8th, in his thirty-eighth year. Mr. Worger, who took the qualifications of L.R.C.P. and M.R.C.S. in 1896, having taken the L.S.A. in the previous year, had a very extensive practice in Radstock and the neighbourhood. He held Poor-law appointments under the Clutton and Frome boards of guardians. He was certifying factory surgeon for the district, and surgeon to the Post Office and the Great Western Railway employees. Mr. Worger took a great interest in ambulance work and was captain of the R.A.M.C., T. F. 2nd S.W. Mounted Brigade Field Ambulance. He was an Associate of the Order of St. John of Jerusalem, the decoration which accompanies this Order being presented to him by the Prince of Wales in June, 1909. The deceased was very popular in Radstock and the district, and much sympathy is felt there for his relatives. The funeral took place on Feb. 11th with full military honours.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. W. Frank Haehnlen, professor of midwifery in the Medico-Chirurgical College of Philadelphia.—Dr. Georges Gasne, physician to the Paris hospitals.—Professor Wilhelm Krause of the Berlin Anatomical Institute, at the age of 76 years. He was formerly extraordinary professor in Göttingen. He published an important text-book on "Human Anatomy," in three volumes, and for some years edited the International *Monatschrift* for Anatomy and Physiology. It may be mentioned that the discovery of the "end bulbs" in the skin, which are known in Germany as "Krause's Endkörperchen," was the work of the deceased professor's father.—Dr. Uzzial Ogden, formerly professor of gynæcology in the University of Toronto.—Dr. Baizeau, retired inspecting medical officer of the French Military Medical Service.—Dr. Ch. Bachelez, physician to the Saint Omer Hospital.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Feb. 10th, Mr. Butlin, the President, being in the chair. It was resolved to issue diplomas of Membership to 59 successful candidates. It was resolved to issue jointly with the Royal College of Physicians of London Diplomas in Public Health to 12 successful candidates. A report was received from the Committee on Anæsthetics, and in accordance with that report the Council concurred with the conclusions of the General Medical Council, with the exception that the Council desired to delete the last five words of conclusion 5 (see THE LANCET, Dec. 11th, 1909, p. 1755) which would debar dentists from administering nitrous oxide gas and other anæsthetics for operations by duly qualified medical practitioners. In response to a request from the Registrar-General it was suggested that at the approaching Census it would serve a useful purpose to have two headings of blindness: (*a*) blind or not able to count fingers in the daylight more than three feet distant; and (*b*) partially blind, cannot be educated or earn a living by means of the sight. If only one class is to be recognised the definition should be that of the first class. Mr. Bilton Pollard was re-elected a member of the Court of Examiners and was elected a member of the Board of Examiners in Dental Surgery. A Member of the College whose name had been previously removed from the Medical Register was removed from the roll of Members. A report was received from the Board of Examiners in Dental Surgery relating to the regulations for the Licence, and the Council in accordance therewith decided that there was no need to make any alteration.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of the Comitia of the Royal College of Physicians on Jan. 27th and a meeting of the Council of the Royal College of Surgeons on Feb. 10th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon the under-mentioned gentlemen, who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Examining Board in England:—

Frank Shirley Adams, Cambridge University and Guy's Hospital; Francis Cooke Alton, St. Thomas's Hospital; William Brodie Gurney Angus, B.A. Cantab., Cambridge University and London Hospital; Charles Henry Fairbank Atkinson, Charing Cross Hospital; Alfred David Eldred Bayliss, University College Hospital; Henry William Catto, Guy's Hospital; Ivo Geikie Cobb, St. Thomas's Hospital; Reginald Cock, Charing Cross Hospital; Robert Francis Preston Cory, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Francis John Craddock, St. Bartholomew's Hospital; Anandrai Keshavlal Dalal, L.M. & S. Bombay, Bombay University and Middlesex Hospital; John Phillip Henry Davies, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Allen Dewar, St. Thomas's and St. Mary's Hospitals; Frank Holt Diggle, M.B., Ch.B. Vict., Manchester University; Roger Bellis Edwards, Liverpool University; Edgar Lionel Elliott, Guy's Hospital; Gilbert James French, Manchester University; Felipe Guevara-Rojas, M.D. Caracas, Caracas University; George Gushue-Taylor, London Hospital; Clifford Hall, Manchester University; Philip Keith Hill, Leeds University and St. Bartholomew's Hospital; Geoffrey Hoffmann, B.A. Cantab., Cambridge University and St. Thomas's Hospital; James Stanley Jobson, Cambridge University and London Hospital; Norman Theodore Kingsley Jordan, Manchester University; Timothy Joseph Killard-Leavey, Guy's Hospital; Stuart Hardy Kingston, Bristol University; John Murgatroyd Land, Leeds University; James Arthur Richard Lee, Sheffield University; Tam Legge, Madras and London Hospital; Ernest MacEwan, London Hospital; †John Macoun, M.B. Toronto, Toronto University and St. Thomas's Hospital; Archibald Campbell Magarey, M.B., B.S. Adelaide, Adelaide University and Westminster Hospital; Robert Telford Martin, London Hospital; Maurice Charles Mason, St. Mary's Hospital; John Harry Meers, St. Mary's Hospital; Sydenham Frederick Moore, B.A. Oxon., Oxford University and St. Thomas's Hospital; Claude Woodham Morris, University College Hospital; John Francis O'Malley, L.R.C.P. & S. I., Dublin and Middlesex Hospital; Wilfrid Langrish Pink, St. Thomas's Hospital; Basil Alfred Playne, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Ernest Edward Andrew Thompson Rigg, University College Hospital; Arthur Leyland Robinson, Liverpool University and University College Hospital; *Arthur Cecil Hamel Rothera, M.A. Cantab., Cambridge University and St. Mary's Hospital; Bidhan Chandra Roy, Calcutta Medical College; Bernard Sangster Simmonds, Middlesex Hospital; Ernest Gerald Stanley, St. Bartholomew's Hospital; Edwin Lawrance Sturdee, St. Bartholomew's Hospital; Frank Stuart Tamplin, St. George's Hospital; Leonard Herbert Taylor, Charing Cross Hospital; Gottfried Oram Teichmann, Middlesex Hospital; Keshav Sadashiv Thakur, L.M. & S. Punjab, Lahore Medical College and University College Hospital; Arthur Henry Leopold Thomas, Cambridge University and St. Mary's Hospital; Wilfred Percy Tindal-Atkinson, St. Thomas's and St. George's Hospitals; James Massimo Todesco, London Hospital; Vivian Thomas Pearce Webster, B.A. Cantab., Cambridge University and Guy's Hospital; Charles Weller, L.D.S. Eng., Guy's Hospital; Cyril Underwood Whitney, Westminster Hospital; John Pryce Williams, Manchester University and St. Mary's Hospital; John Wilson Williams, University College, Cardiff, and Guy's Hospital; and Neville Scott Williams, Cambridge University and St. Thomas's Hospital.

† M.R.C.S. Diploma granted under Regulations previous to Oct. 1st, 1884. * M.R.C.S. Diploma granted on Jan. 13th, 1910.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Diplomas in Public Health have been conferred in conjunction with the Royal College of Physicians of London upon the undermentioned 12 gentlemen:—

Devarayadoorg Venkata Giri, L.R.C.P. & S. Edin., L.F.P.S. Glasg., Bombay and Edinburgh Universities; Walter Leigh Mackinnon Goldie, F.R.C.S., L.R.C.P., M.R.C.S., Edinburgh University, St. Mary's and St. George's Hospitals; Arthur Henry Headley Huckle, L.R.C.P., M.R.C.S., L.S.A., Guy's Hospital and University College; Kombur Ramaswamy Krishnaswamy Iyengar, M.B., Ch.B. Edin., Edinburgh University and University College; John Macpherson Johnston, M.B., Ch.B. Edin., L.R.C.P., M.R.C.S., Edinburgh University and King's College; Jagannath Vasudev Karve, M.B., Ch.B. Edin., Madras and Edinburgh Universities; James Alexander Milne, M.B., B.S. Lond., L.R.C.P., M.R.C.S., London Hospital; Herbert Wilberforce Perkins, F.R.C.S., L.R.C.P., Middlesex Hospital; Frederick Joseph Wilfrid Sass, L.R.C.P., M.R.C.S., St. Mary's Hospital and Royal Institute of Public Health; Sidney Browning Smith, Major I.M.S., L.R.C.P., M.R.C.S., St. Bartholomew's Hospital and Royal Army Medical College; Edmund Fairfield Thomas, L.R.C.P., M.R.C.S., M.D. Brux., L.S.A., Bristol University, Middlesex Hospital, and University College, Cardiff; and Alexander Butchart MacArthur Thomson, M.B., Ch.B. Edin., Edinburgh University and London Hospital.

The Council conferred the Diploma of Fellow upon Mr. John Henry Farbstein, M.B., B.S. Lond., L.R.C.P., M.R.C.S., University College Hospital, who has now reached the requisite age of 25 years. Licences to practise dentistry were also conferred upon the following two gentlemen, who have now complied with the necessary by-laws—viz., John Herbert Drinkall, Middlesex and National Dental Hospitals; and Robert William Morrell, Guy's Hospital.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Paul Schuster, *privat-docent* of Neurology, has been granted the title of Professor.—*Berne:* Professor Peter Müller, who is in his seventy-fourth year, intends to resign the Obstetrical Chair. His successor will probably be Dr. Walthard of Frankfort, who was formerly a member of the Berne Medical Faculty.—*Breslau:* Dr. Georg Boenninghaus, *privat-docent* of Otology and Rhinology, has been granted the title of Professor.—*Dorpat (Yurieff):* Dr. P. A. Poliakoff has been promoted to the chair of Histology.—*Giessen:* Dr. A. Thies has been recognised as *privat-docent* of Surgery.—*Göttingen:* Dr. Philipp Jung, Professor in Erlangen, has been appointed Professor of Midwifery and Gynæcology, in succession to Dr. Max Runge.—*Heidelberg:* Dr. Max Höfler has been given an honorary Ph.D. in recognition of his researches in folklore.—*Messina:* Dr. Giacinto Viola, Extraordinary Professor of Medical Pathology, has been promoted to an Ordinary Professorship.—*Munich:* Dr. Birkner, *privat-docent* of Anthropology, has been promoted to an Extraordinary Professorship.—*Palermo:* Dr. Rocco Iemma, Extraordinary Professor of Children's Diseases, has been promoted to an Ordinary Professorship.—*Prague (Bohemian University):* Dr. Franz Votruba has been recognised as *privat-docent* of Medicine.—*St. Petersburg Military Medical Academy:* Dr. A. A. Maximoff has been promoted to the chair of Histology and Embryology.—*Strasburg:* Dr. K. Adrian, *privat-docent* of Dermatology, Dr. R. Dreyfus, *privat-docent* of Laryngology, and Dr. A. Funke, *privat-docent* of Midwifery and Gynæcology, have been granted the title of Professor.—*Tomsk:* Dr. V. N. Savin of Moscow has been appointed Professor of Operative Medicine and of Topographic Anatomy.—*Tübingen:* Dr. Peckert of Heidelberg has been appointed Extraordinary Professor of Odontology.—*Turin:* Dr. Enrico Martini has been recognised as *privat-docent* of External Pathology.—*Vienna:* Dr. Dimmer of Gratz, who at first declined the first chair of Ophthalmology, has now been persuaded to accept it. Dr. O. Kren and Dr. Gustav Scherber have been recognised as *privat-docenten* of Dermatology.

UNIVERSITY OF LONDON: BOARD OF THE FACULTY OF MEDICINE.—At the meeting of the Senate on Jan. 26th the following scheme was approved for the constitution of a Board of the Faculty of Medicine. (1) The Board shall consist of (*a*) the Dean of the Faculty, who shall be *ex-officio* Chairman of the Board; (*b*) the Secretary of the Faculty, being a member of the Faculty; (*c*) all members of the Faculty who are also members of the Senate; (*d*) the Chairman, being a member of the Faculty, of the Board of Studies in each of the following subjects: Preliminary Medical Studies, Intermediate Medical Studies, Advanced Medical Studies, Dentistry, Pharmacy (when constituted), Hygiene and Public Health, Physiology and Experimental Psychology, Human Anatomy and Morphology; (*e*) representatives, to the number indicated in each case, of the following Boards of Studies, to be appointed from the members of the Faculty by the Faculty on the nomination of the appropriate board: Preliminary Medical Studies, two; Intermediate Medical Studies, two; Advanced Medical Studies, four; (*f*) any other member or members of the Faculty (not exceeding six in all) whom the Faculty may appoint, in each case after nomination by at least two members of the Faculty. (2) The Board shall be appointed annually by the Faculty as soon as possible after receiving the reports of the Boards of Studies made at their first meeting in each year. (3) No quorum shall be required for a meeting of the Board. (4) The Board may appoint an honorary secretary. (5) The Board shall report to the Faculty.

ST. MARK'S HOSPITAL, CITY-ROAD, E.C.—Sir Richard B. Martin, treasurer, who presided at the annual general meeting of the governors of this hospital on Feb. 10th, in moving the adoption of the report called attention to the fact that, in spite of all efforts to raise funds and the severe economy which had been practised in all directions, the income for the past 12 months had been £900 less than the expenditure for the same period. In consequence it had been necessary to part with £1000 out of capital to meet the deficit. This was a very serious matter, considering the limited amount of invested property held by the trustees. The chairman drew attention to an important proposal submitted by the committee of management—viz., that in future the word "cancer" should be added to the name of the hospital, making it read "The St. Mark's Hospital for Cancer, Fistula, and Other Diseases of the Rectum." This was unanimously agreed to.

THE KING AND RAGGED CHILDREN.—Attention was called in THE LANCET recently (Dec. 11th, 1909, p. 1791) to the Brighton Police-aided Scheme for Clothing Destitute Children, under which members of the force noted insufficiently clad children on their beats, and, after careful inquiries had been made, saw that these urchins became candidates for the police wardrobe. There was a distribution of clothing to a party of such children on Feb. 12th and it was witnessed by the King, who was at that time spending a week in the town on a private visit. His Majesty told the chief constable, Mr. W. B. Gentle, the originator of the beneficent work, that he had heard of the good work the Brighton police were doing and embraced the opportunity of seeing it for himself. His Majesty saw some of the children in their ragged state and after they had been re-clothed, and so impressed was he that he gave a cheque for £10 towards the fund, another member of the Royal party giving £5. Last year no fewer than 850 children were clothed out of the funds under the scheme, while 60 girls were placed out in service.

HENRIETTA HOUSE NURSING HOME.—We have inspected this nursing home in which an attempt has been made to obtain the benefits associated with a private clinic without the disadvantages which might possibly be associated with it. Henrietta House, in Henrietta-street, Cavendish-square, is a building which was formerly an hotel, and therefore possesses a large number of rooms. It has been reconstructed and fitted so as to provide a modern private hospital for paying patients. The rooms are large, well lighted and ventilated, and the furniture is of a character rarely seen elsewhere than in a private house. Each bed is fitted with a Lawson Tait mattress, and both electric bell and light are within easy reach of the patient. 24 rooms are available for patients, and a bathroom is on each floor. All the floors are served by an electric passenger lift running in the well of the staircase, and large enough to carry a trolley with a patient lying at full length. At the top of the building is the operating theatre. It has a good north light and the fittings are of the most modern type. A large stock of instruments is provided for the use of surgeons. Adjoining the theatre is the anæsthetic room. There is also a high-pressure vacuum steriliser. A medical man lives on the premises. His services are available at any time in case of emergency, and his presence insures that directions of physicians or surgeons in charge of patients are fully carried out. He does not treat the patients, but is at hand to attend to acute necessities and to superintend generally the hospital. We were much pleased with what we saw, and we think that Henrietta House sets in some ways an example which might be followed by other nursing homes with benefit both to the patients and to those treating them.

CHICHESTER INFIRMARY.—Following up the decision arrived at on the occasion of the annual meeting in November, when a subcommittee was appointed to consider what steps should be taken to improve the finances of the Chichester Infirmary, there being a deficit on the year of £1500, this subcommittee has just presented its report. While many of the suggestions have not met with the approval of the governors some good no doubt will be done if only by again calling attention to the need of increasing the income, and the Mayor of Chichester has promised to issue an appeal, which should meet with a ready response seeing that the infirmary covers such a wide area as is shown by its full title, The West Sussex, East Hants, and Chichester Infirmary. The suggestions which were made at the governors' meeting on Feb. 4th were that an out-patient's letter should be given for 5*s.* to induce more subscribers of this sum, that the minimum subscription for one in-patient's letter should be £3 3*s.* instead of £2 2*s.* as at present, and that there should be a registration fee of 6*d.* for out-patients. These proposals were either omitted or withdrawn; and a resolution requesting the governors to draw upon the reserve fund of £15,000 to meet the deficit and thus secure the Royal Warrant promised by His Majesty the King when the debt is removed and the finances are placed on a sound basis was negatived, strong objection being raised to the institution

drawing upon its capital. The committee was enlarged to 16 governors, and it was decided to appoint a paid secretary to give the whole time to the infirmary.

GLANDERS IN LONDON.—During the six weeks ended Jan. 29th, 1910, 90 cases of glanders in London were reported by the London County Council veterinary inspectors, and in each case the animal was slaughtered.

A SUPER-CENTENARIAN.—Miss Hensley has died at Bath in her 104th year. She was a sister of the late Dr. Hensley of Bath and of the late Rev. C. Hensley, vicar of Cabourne, who lived until he was 97 years of age.

CHESTER TOWN COUNCIL AND OPHTHALMIA NEONATORUM.—At the monthly meeting of the Chester town council, on the motion of Dr. Alfred Mann, chairman of the public health committee, it was resolved that the provisions of the Infectious Disease (Notification) Act, 1889, should apply to cases of ophthalmia neonatorum.

ADULTERATED MILK AT DEVONPORT.—At the Devonport police court on Feb. 9th two milksellers were fined £1 and 10*s.* respectively for selling adulterated milk. The assistant town clerk, who prosecuted, remarked that milk adulteration was on the increase in Devonport. During the present year 18 samples had been taken and 14 of these were adulterated.

PRESENTATION.—At the annual meeting of the members of the Portishead (Somerset) Men's Adult School, the rector (the Rev. H. W. Jukes), on behalf of the class, presented Mr. William Monckton, L.R.C.P. Edin., M.R.C.S. Eng., with an inkstand, suitably inscribed, as a mark of respect and appreciation for the services he has rendered in the parish for the past 24 years.

THE ROYAL SANITARY INSTITUTE.—The provincial sessional meeting on Feb. 25th will be held in the council chamber, county offices, St. Mary's-gate, Derby, at 7.30 P.M., when discussions will take place on Treatment of School Children, to be opened by Dr. Sidney Barwise, medical officer of health of Derbyshire; and on Derbyshire Elementary Schools, Principles of Planning, to be opened by Mr. G. H. Widdows, A.R.I.B.A. The chair will be taken at 7.30 P.M. by Mr. H. D. Searles-Wood, F.R.I.B.A., chairman of the council of the institute. On the following day visits will be paid to the Derbyshire County and Derby Borough schools.

UNIVERSITY COLLEGE (UNIVERSITY OF LONDON).—In memory of the late Dr. Ludwig Mond's scientific eminence and his generous benefaction of £3000 towards the building of the Institute of Physiology at University College, the committee of University College, London, have resolved to name the bio-chemistry research department of the institute, "The Ludwig Mond Bio-chemistry Research Laboratory." The University College committee will shortly proceed to elect a Crewdson-Benington research student. The studentship, of the value of £50, tenable for one year in the biometric research laboratory of the College, is for the promotion of research in anthropometry and craniology in relation to evolution. Candidates should send their applications, together with any statement of qualifications that they desire to submit, not later than March 1st to the secretary of University College, Gower-street, London, W.C., who will furnish particulars of the studentship.

THE ROYAL MATERNITY CHARITY OF LONDON.—The report of this charity for the year ending Dec. 31st, 1909, shows that the number of cases treated was 2351, the number of infants born being 2385. There were five deaths among the mothers and 37 among the infants. The ages of the mothers (cases treated) were from 17 to 48 years. The medical report, which is signed by Dr. S. P. Sunderland, Dr. H. R. Andrews, and Dr. L. Williams, notes that the services of the surgeons of the charity have been called into requisition in no less than 191 cases. Two of the deaths of mothers were due to causes for which labour could not be held responsible, and the other three were due to grave complications of labour. The medical committee "feels satisfied that the high reputation of the charity for care, promptitude, and efficiency has been fully maintained." The object of the Royal Maternity Charity, which was founded 150 years ago, is to check infant mortality and to secure skilled nursing for destitute lying-in women in their own homes, but its work is much hampered by the need for greater financial support. The address of the secretary is 31, Finsbury-square, London, E.C.

THE HEALTH OF WESTON-SUPER-MARE (SOMERSET).—The medical officer of health of Weston-super-Mare in his annual report for 1909 states that, with an estimated population of 23,500, the death-rate was 11·74 (exclusive of visitors the rate was 10·6) per 1000.

THE BRISTOL MEDICAL CHARITIES.—During 1909 the employees of Messrs. W. D. and H. O. Wills collected £735, the workpeople of Messrs. J. S. Fry and Sons subscribed £588, and the employees of Messrs. E. and A. Robinson raised £282 for the Bristol medical charities.

HASTINGS WATER-SUPPLY.—The Hastings ratepayers have been very much exercised of late on the question of a Various Powers Bill promoted by the town council, which includes a number of clauses with a view of safeguarding the town's water-supply. Notwithstanding that on 25 days during last summer the consumption of water was in excess of that which could be obtained by day and night pumping, an appeal to the town has resulted in a majority of 4792 against the Bill in a poll of 5908. The chief element in the opposition to the Bill has, of course, been the expense, ratepayers being led to believe either that there is no cause for alarm or there is no immediate hurry. But the ratepayers of Hastings have had the warning. No town, and particularly a seaside resort like Hastings, largely dependent upon its visitors in the summer months, can afford to quibble about expense connected with its water-supply.

BOOKS, ETC., RECEIVED.

APPLETON, D., AND CO., New York and London.

Girl and Woman. A Book for Mothers and Daughters. By Caroline Wormeley Latimer, M.D., M.A. With an Introduction by Howard A. Kelly, M.D. Price 6*s.* net.

A Practical Treatise on Ophthalmology. By L. Webster Fox, M.D., LL.D. Price 25*s.* net.

Modern Clinical Medicine. Diseases of Children. Edited by Abraham Jacobi, M.D., LL.D. An Authorised Translation from "Die Deutsche Klinik" under the General Editorial Supervision of Julius L. Salinger, M.D. Price 25*s.* net.

ARNOLD, EDWARD, London.

Contributions to Abdominal Surgery. By the late Harold Leslie Barnard, M.S., F.R.C.S. Edited by James Sherren, F.R.C.S. Price 15*s.* net.

BAILLIERE, TINDALL, AND COX, London.

Congenital Dislocation of the Hip. By J. Jackson Clarke, M.B. Lond., F.R.C.S. Price 3*s.* 6*d.* net.

A Manual of Midwifery. For Students and Practitioners. By Henry Jellett, B.A., M.D. Dub. Univ., F.R.C.P.I., L.M. With the Assistance in Special Subjects of W. R. Dawson, M.D., F.R.C.P.I., H. C. Drury, M.D., F.R.C.P.I., T. G. Moorhead, M.D., F.R.C.P.I., and R. J. Rowlette, M.D. Second edition. Price 21*s.* net.

Handbook of Diseases of the Ear. For the Use of Students and Practitioners. By Richard Lake, F.R.C.S. Eng. Third edition. Price 7*s.* 6*d.* net.

BALE (JOHN), SONS, AND DANIELSSON, LIMITED, London.

The Medico-Chirurgical Series, No. 2. The Stomach, Intestines, and Pancreas. By W. C. Bosanquet, M.A., M.D. Oxon., F.R.C.P., and H. S. Clogg, M.S. Lond., F.R.C.S. Eng. Edited by James Cantlie, M.A., M.B., C.M. Aberd., F.R.C.S. Eng. Price 12*s.* 6*d.* net.

The Bacteriologist's Aid to Memory (A Handy Reference Sheet for the Laboratory). By J. W. S. Seccombe, M.R.C.S., L.R.C.P., D.P.H., Captain, Royal Army Medical Corps. Price 3*s.* 6*d.* net; mounted on linen, 4*s.* 6*d.* net; mounted on linen with rollers, 5*s.* 6*d.* net.

BARBER, GEORGE, Furnival Press, London.

William Shakespeare and Timothy Bright. By Matthias Levy. Price 1*s.*

BELL, GEORGE, AND SONS, London.

Hoblyn's Dictionary of Terms used in Medicine and the Collateral Sciences. Fourteenth Edition. Revised throughout, with numerous Additions by John A. P. Price, B.A., M.D. Oxon. Price 10*s.* 6*d.*

BLACKIE AND SON, LIMITED, London, Glasgow, Dublin, and Bombay.

Food Inspection. A Practical Handbook. By Hugh A. Macewen, M.B., Ch.B. Glasg., D.P.H. Lond., D.P.H. Cantab. Price not stated.

BURROUGHS, WELLCOME, AND CO., London, New York, Montreal, Sydney, Cape Town, and Shanghai.

Wellcome's Medical Diary and Visiting List. 1910. Price not stated.

BUTTERWORTH AND CO., London. SHAW AND SONS, London.

Housing and Town Planning in Great Britain. By W. Addington Willis, LL.B. Lond., of the Inner Temple, Barrister-at-law. Price not stated.

MARHOLD, CARL, Halle a.S.

Klinik für Psychische und Nervöse Krankheiten. Herausgegeben von Robert Sommer, Dr. med. et phil. IV. Band. 4 Heft. Preis M.12 pro Band.

Die Behandlungsmethoden des Chronischen Magengeschwürs. Von Prof. Dr. M. Matthes. (Sammlung zwangloser Abhandlungen aus dem Gebiete der Verdauungs- und Stoffwechsel-Krankheiten. Herausgegeben von Prof. Dr. A. Albu in Berlin. II. Band, Heft 4.) Price M.1.40.

MASSON ET CIE, Paris.

Manuel de Neurologie Oculaire. Par F. de Lapersonne et A. Cantonnet. Price Fr.6.

NISBET, JAMES, AND CO., LIMITED, London.

Nisbet's Medical Directory, 1910. In Two Parts. Part I., Directory of Medical Practitioners. Part II., The Local Directory. Price 7*s.* 6*d.*

A Plea for the Home Treatment and Prevention of Scarlet Fever. By Robert Milne, M.D., Ch.M., Medical Officer of Dr. Barnardo's Hospitals and Homes for Thirty Years. Price 2*s.*

PHILOPOLIS PRESS, THE, San Francisco, Cal., U.S.A.

Spondylotherapy. Spinal Concussion and the Application of Other Methods to the Spine in the Treatment of Disease. By Albert Abrams, A.M., M.D. (University of Heidelberg), F.R.M.S. Price $3.50.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, London.

List of the Fellows, Members, Extra-Licentiates, and Licentiates of the Royal College of Physicians of London and of the Holders of the Diploma in Public Health granted jointly by the Royal Colleges of Physicians and Surgeons. Price not stated.

Catalogue of Accessions to the Library of the Royal College of Physicians of London during the Year ending July, 1909, with List of Periodicals. Price not stated.

SANITARY PUBLISHING CO., LIMITED, London.

Handbook of Scotch Sanitary Law. Third Edition. By Thomas W. Swanson, Assoc. R. San. Inst.; Mem. San. Assoc.; Cert. Victoria University. Price 2*s.* 6*d.*

SAUNDERS (W. B.) COMPANY, London.

A Practical Study of Malaria. By William H. Deaderick, M.D. Price 20*s.* net.

A Text-book of Obstetrics. By Barton Cooke Hirst, M.D. Sixth Edition, revised and enlarged. Price 21*s.* net.

A Text-book on the Practice of Gynecology. For Practitioners and Students. By William Easterly Ashton, M.D., LL.D. With 1058 new line drawings, illustrating the text, by John V. Alteneder. Fourth edition, revised and enlarged. Price 27*s.* 6*d.* net.

The Principles of Hygiene. A Practical Manual for Students, Physicians, and Health-Officers. By D. H. Bergey, A.M., M.D. Third edition, thoroughly revised and enlarged. Price 13*s.* net.

A Manual of Normal Histology and Organography. By Charles Hill, Ph.D., M.D. Second edition, thoroughly revised. Price 10*s.* net.

Clinical Studies for Nurses. By Charlotte A. Aikens. Price 10*s.* net.

Bier's Hyperemic Treatment in Surgery, Medicine, and the Specialties. A Manual of its Practical Application. By Willy Meyer, M.D., and Prof. Dr. Victor Schmieden. Second revised edition, enlarged. Price 13*s.* net.

SPRINGER, JULIUS, Berlin.

Praktische Anleitung zur Syphilisdiagnose auf biologischem Wege. (Spirochæten-Nachweis, Wassermannsche Reaktion.) Von Dr. P. Mulzer. Price, paper, M.3.60; bound, M.4.40.

THURNAM, CHARLES, AND SONS, Carlisle.

Alcohol: its Effects upon the Organs of the Body. Being a Lecture delivered before the St. John's Branch of the Church of England's Men's Society, at St. John's Hall, South Street, Carlisle, on Tuesday, December 7th, 1909, by H. A. Lediard, M.D. Ed., F.R.C.S. Eng. Price not stated.

UNIVERSITY CORRESPONDENCE COLLEGE, Cambridge and London.

Matriculation Directory. No. 54, January, 1910. With Articles on Text-books. Price 1*s.* net.

UNWIN, T. FISHER, London and Leipsic.

The Conquest of Consumption. An Economic Study. By Arthur Latham, M.D., and Charles H. Garland. Price 4*s.* 6*d.* net.

VOGEL, F. C. W., Leipzig.

Archiv für Experimentelle Pathologie und Pharmakologie. Redigirt von Dr. B. Naunyn und Dr. O. Schmiedeberg. Zweiundsechzigsten Bandes, Zweites und Drittes Heft. Ausgegeben 9 Februar, 1910. Price not stated.

WITHERBY AND CO., London.

The Royal Navy List and Naval Recorder. Number 129. January, 1910. Price 10*s.*

WRIGHT, JOHN, AND SONS, LIMITED, Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)

"First Aid" to the Injured and Sick. An Advanced Ambulance Handbook. By F. J. Warwick, B.A., M.B. Cantab., M.R.C.S., L.S.A., A.K.C. Lond., and A. C. Tunstall, M.D., F.R.C.S. Ed. Sixth edition. Revised and enlarged. 45th Thousand. Price, paper, 1*s.* net.; leather, 2*s.* 6*d.* net.

A Synopsis of Surgery. By Ernest W. Hey Groves, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng. Second edition, revised and illustrated. Price 9*s.* 6*d.* net.

YEAR BOOK PUBLISHERS, Chicago. (G. GILLIES AND CO., Glasgow.)

The Practical Medicine Series. Under the General Editorial Charge of Gustavus P. Head, M.D. Vol. X. Nervous and Mental Diseases. Edited by Hugh T. Patrick, M.D., and Charles L. Mix, A.M., M.D. Series 1909. Price 5*s.* net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAMS, W. F., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Rayleigh District of the county of Essex.

AWDRY, WALTER ROBERT, M.B. Durh., M.R.C.S., has been appointed Medical Officer to the Berkeley (Gloucestershire) Hospital.

BRAUND, H., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Samaritan Free Hospital.

BOND, C. HUBERT, D.Sc., M.D. Edin., has been appointed Lecturer on Mental Diseases at the Middlesex Hospital Medical School.

BUDD, ARTHUR, M.B., B.S. Durh., has been appointed Honorary Surgeon to the Launceston (Cornwall) Infirmary.

DEVANE, J. F., M.B., B.Ch. R.U.I., F.R.C.S. Irel., D.P.H., has been appointed Visiting Physician to the Limerick County Infirmary.

GIBSON, CHARLES GORDON, M.B., C.M. Edin., has been appointed Honorary Surgeon to the Launceston (Cornwall) Infirmary.

HEATH, H. LLEWELLYN, D.P.H. Cantab., has been appointed Bacteriologist to the East Suffolk and Ipswich Hospital.

MORROW, H. L., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Ballylesson District of the county of Down.

MUSGRAVE, CECIL BENJAMIN THOMAS, M.D. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Surgeon to the Launceston (Cornwall) Infirmary.

PINNIGER, WILFRID JAMES HUSSEY, M.B., B.S. Lond., L.R.C.P., M.R.C.S., has been appointed Medical Officer to Müller's Orphans Houses, Ashley Down, Bristol.

SERPELL, HUGH HAMILTON, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Surgeon to the Launceston (Cornwall) Infirmary.

WILCOX, HENRY, M.B. Aberd., has been appointed Clinical Assistant to the Samaritan Free Hospital.

WILLS, R. G., M.B., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Physician to the Bootle Borough Hospital.

WOODWARK, A. S., M.D. Lond., M.R.C.P. Lond., has been appointed Physician to the Royal Waterloo Hospital for Children and Women.

WOODYATT, H. C., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Samaritan Free Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Honorary Ophthalmic Surgeon.

BATH ROYAL UNITED HOSPITAL.—House Physician. Salary £80 per annum, with board, lodging, and washing.

BIRMINGHAM QUEEN'S HOSPITAL.—Pathologist. Salary £100 per annum.

BIRMINGHAM UNIVERSITY, PATHOLOGICAL DEPARTMENT.—Assistant Lecturer in Pathology and Bacteriology. Salary £50 per annum.

BRADFORD ROYAL INFIRMARY.—House Physician and Two House Surgeons, all unmarried. Salary in each case £100 per annum, with board, residence, and washing.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN.—House Surgeon for six months. Salary at rate of £80 per annum, with board, lodging, and washing.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Second House Surgeon, unmarried. Salary £60 per annum, with apartments, board, and laundry.

BUENOS AYRES, BRITISH HOSPITAL.—Senior Resident Medical Officer. Also Assistant Resident Medical Officer, both unmarried. Salaries £250 and £200 per annum respectively, with board, lodging, &c.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL.—House Physician. Salary £60 per annum, with board, residence, and laundry.

CANCER HOSPITAL, Fulham-road, S.W.—Medical Officer in Charge of the Electrical Department. Salary £26 5*s.* per annum.

CHELTENHAM GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board, lodging, and washing.

DORCHESTER, DORSET COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Assistant Surgeon and Ophthalmic Surgeon.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.—House Physician. Salary at rate of £60 per annum, with board, residence, and washing.

HUDDERSFIELD, COUNTY BOROUGH OF.—Assistant Medical Officer of Health (female). Salary £150 per annum.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, &c.

KING'S COLLEGE HOSPITAL, London, W.C.—Assistant Aural Surgeon.

KING'S LYNN, WEST NORFOLK AND LYNN HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

LEAMINGTON, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Two Resident Medical Officers. Salary, senior £100, and junior £65 per annum, with board, washing, and apartments.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Physician and Two House Surgeons for six months. Salaries at rate of £60 per annum, with residence and maintenance.

LIVERPOOL DISPENSARIES.—Head Surgeon, unmarried. Salary £170 per annum, with board and apartments.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Also Junior House Surgeon. Salaries £100 and £60 per annum respectively, with board and residence.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer, unmarried. Salary for first six months £40, for second six months £50.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Clinical Assistants.

NEW HOSPITAL FOR WOMEN, 144, Euston-road.—Surgical Assistant (female).

NORTHAMPTON, COUNTY BOROUGH OF.—Assistant Medical Officer of Health. Salary £250 per annum.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160, with apartments, &c.

PERTH COUNTY EDUCATION COMMITTEE.—School Medical Officer. Salary £350 per annum, and expenses.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, residence, and washing.

ROTHERHAM HOSPITAL.—Senior House Surgeon. Salary £110 per annum, with board, lodging, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Assistant Surgeon.

ROYAL NAVAL MEDICAL SERVICE.—Examination for Fifteen Commissions.

ST. MARY'S HOSPITAL, London, W.—Resident Assistant Anæsthetist for six months. Salary at rate of £100 per annum, with board and residence.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square, W.C.—Clinical Assistants.

SHEFFIELD UNIVERSITY.—Junior Demonstrator in Pathology. Salary £150 per annum.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon. Salary £82 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £75 per annum.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board and lodging.

WALSALL AND DISTRICT HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with board, residence, &c.

WEST HAM INFIRMARY, Whipp's Cross-road, Leytonstone, N.E.—Third Assistant Medical Officer. Salary £120 per annum.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and laundry provided.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Widnes, in the county of Lancaster.

Births, Marriages, and Deaths.

BIRTHS.

CHAMBERS.—On Feb. 9th, at The Priory, Roehampton, the wife of James Chambers, M.D., of a daughter.

FAIRBANK.—On Feb. 14th, at Montagu Mansions, the wife of H. A. T. Fairbank, M.S., F.R.C.S., of a daughter.

ROGERS.—On Feb. 8th, at Boundary-road, St. John's Wood, the wife of David de Sola Rogers, L.D.S. R.C.S. Eng., of Buenos Ayres, of a son.

SMYTH.—On Feb. 10th, at 2, Lyford-road, Wandsworth Common, to Dr. and Mrs. Smyth, twin sons.

STRATFORD.—On Feb. 8th, at Earl's Court road, S.W., the wife of Howard M. B. Stratford, M.R.C.S., L.R.C.P. Lond., of a son.

WHITTING.—On Feb. 12th, at Hollydene, Maidenhead, the wife of Robert E. Whitting, M.D., of a son.

MARRIAGES.

STALLARD—BELL.—On Feb. 12th, at Bombay Cathedral, Philip Lechmere Stallard, M.R.C.S., L.R.C.P., D.P.H., D.T.M., and M.A. Cantab., to Dorothea, third daughter of the Rev. J. W. B. Bell, Vicar of Pyrton, Oxfordshire.

DEATHS.

CLARKE.—On Feb. 14th, 1910, at Kotona, Huddersfield, Thomas Kilner Clarke, M.A., F.R.C.S., J.P., aged 66.

COBB.—On Feb. 14th, at Belmont, Stevenage, Ernest H. Cobb, M.R.C.S., L.R.C.P., aged 49.

HILLYER.—On Feb. 5th, William Herbert Hillyer, L.R.C.P. & S. Edin.

HUGHES.—On Feb. 12th, at Holly-grove, Newick, Hugh Spencer Hughes, M.R.C.S., aged 82.

MARRIOTT.—On Feb. 14th, Sir Charles Hayes Marriott, M.D., D.L., of Kibworth-Harcourt, Leicestershire, in his 76th year.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE CLASSIFICATION OF ODOURS.

Dr. Paul W. Goldsbury writes to us from Boston, U.S.A., concerning our recent leading article upon the classification of odours (THE LANCET, Vol. II., 1909, p. 1756) and informs us that he has been making a study of this subject for some time, as he considers that "each of the special senses should have its own particular field of hygiene," and believes that the body as a whole can suffer in various ways from the neglect of attention to any individual sense, a proposition which with our present knowledge of the interdependence of other bodily functions and of internal secretions we do not find very difficult of acceptance. He informs us that he has in his office a series of some 70 odours for reference, the arrangement of which is based upon Piesse's book on "Olfactics and the Senses." He considers that we have been inclined to let the sense of smell deteriorate by the more active exercise of the functions of the eye and ear, and in a pamphlet written by himself on "Principles of Therapeutics by Sense Culture" he makes the following suggestions with regard to the development of the sense of smell:—

> "The strong smelling bottle when used is like a solar plexus blow; instead of this the writer has a little case of four bottles containing mild selected odours. Occasional sniffs from these in turn result in a light form of gymnastics for the olfactory tract. To exercise this tract is to stimulate its circulation and this helps to relieve congestion in over-stimulated adjacent tracts, as of the eye or ear, whether in the brain or outside of it. A student preparing for examination obtained some refreshment while studying by such gymnastics. A case of rhinitis found relief to an appreciable extent by this kind of counter-stimulation. A case of neuralgia was directed in daily walks during the spring days not only to look for fresh colours, but fresh odours, whether of new wood or those of buds and blossoms, and this was found with other measures to contribute to a marked general and local improvement. How much the fresh odours of out-of-door life for tubercular cases by stimulating respiratory and cerebral activities have to do with general improvement has not been very specifically studied. Pharmaceutical preparations have certain virtue in their appeal to smell, and more consideration should be given such a property. Some scientists even go so far as to say that in the evolution of civilisation this sense may be dispensed with, but the writer would argue to redeem it from its present state of neglect that it may be developed and exercised to a point of discrimination where it will supersede the use of other senses in many laboratory tests."

If Dr. Goldsbury is correct in his views it would seem that the pretty competition of Japanese tea-parties, which consists in identifying a series of odours burnt as incense, has a hygienic justification At the same time there are many people with an extremely deficient sense of smell who go through life without any marked consequent disability, although an anosmic candidate might find his infirmity an insuperable obstacle in a practical examination in chemistry.

PUBLIC HEALTH IN BRITISH GUIANA.

A REPORT on the Blue-book of British Guiana for 1908-09 has been prepared by Mr. J. Hampden King, Assistant Government Secretary, and is now issued as a Parliamentary paper. It states that the health of the colony during the year was better than in 1907-08, when the death-rate was the highest for ten years. There was no epidemic of any dangerous, infectious, or contagious disease, though the existence of yellow fever and plague in neighbouring places gave rise to considerable anxiety. Malarial fever continues to claim a large number of victims, and the medical department has not relaxed its efforts to make the inhabitants of the colony realise that mosquitoes are the carriers of this disease and that all measures for their destruction must be supported. The municipality of Georgetown has given a lead in the direction of vat-screening regulations and the clearing away of bush and rubbish generally, and the visit to the colony of Sir Rubert Boyce of the Liverpool School of Tropical Medicine has given a much-needed and welcome impetus to anti-malarial measures generally. Quinine is now sold at the district post offices all over the Colony at cost price, and its use is steadily increasing. The sales rose this year to 2076 ounces. Steps have been taken to procure this drug put up in chocolate and comfits with a view to increasing its consumption among the children. The Medical Department continues to give close and constant attention to the question of ankylostomiasis, and the intelligent interest that has been aroused in this connexion among the employers of labour on the sugar estates and among the labourers themselves is already bearing fruit; the loss of labour from the debilitating effects of the disease, though still very heavy, is appreciably less than it was a few years ago. There were a

few sporadic cases of enteric and blackwater fevers, but, as usual, the principal causes of death were malarial fevers, diarrhœal diseases, and phthisis and other forms of tuberculosis. This latter was the cause of 7·4 per cent. of the total mortality of the colony, and of 8·4 per cent. in Georgetown. The Society for the Prevention and Treatment of Tuberculosis continues its labours, and is gradually getting into closer touch with the people. In December Professor Deycke of Hamburg arrived in the colony for the purpose of carrying out at the Leper Asylum his treatment of leprosy by nastin. It is too soon for any definite opinion to be expressed with regard to it, but the Surgeon-General reports that the outlook is distinctly promising, and the treatment is being steadily followed at the asylum on the lines laid down by Professor Deycke. The inmates of the Leper Asylum at the opening of the year numbered 403—285 males and 118 females. The death-rate on total number of inmates was approximately 10·3 per cent. There are five hospitals in the colony, besides several dispensary hospitals and dispensaries in the outlying districts. The hospitals are well-appointed institutions with up-to-date appliances and arrangements for the care of the sick. At the Georgetown Hospital there is a well-organised bacteriological department. There has been no census taken in the colony since 1891, but it has been decided to take one in 1911. Meanwhile the population is estimated at 304,549. The birth-rate for the year was 27·3 per 1000 and the death-rate 30·8 per 1000 of the estimated population, as against 28·3 and 36·9 in the previous year.

DEFECTIVE VISION: A CAUSE OF DISASTER AT SEA.

THE letter which we publish below has been forwarded to us by Mr. R. A. Caldwell, and is of peculiar interest at the present time. It will be observed that it was written to the *Nautical Magazine* more than 30 years ago. The apprehensions cited, the justification of which has been amply confirmed in the interval, have received attention from the Board of Trade, but they are by no means set at rest. Possibly if Mr. Caldwell's suggestion that the officer "should produce a 'Certificate of Competence,' *to be obtained from a regular oculist* (ophthalmic surgeon), before entrusting him with the responsible charge of the night-watch of a modern steamer" had been adopted, less would be heard to-day about the inefficiency of the colour-vision tests. We have had occasion recently to call attention to the subject of colour blindness and the Board of Trade in connexion with the now notorious "Trattles' case." The onus of responsibility in this matter has been accepted by the Board of Trade. Their methods, be the cause what it may, are inefficient. It remains for them to take the steps necessary for solving the problem and removing from the minds of the ever-increasingly vast multitude of the travelling public those apprehensions to which Mr. Caldwell so long ago directed attention in our columns and elsewhere.

DEFECTIVE VISION, A CAUSE OF DISASTER AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—I venture to ask a space in your paper to draw the attention of those interested in nautical matters to the above subject.

My argument is briefly contained in the two following propositions:—1st. I hold that the quality of eye-sight that was good enough to steer clear of the old sailing packet, is by no means adequate to recognise *surely* and *promptly* the lights of the modern steamer, where the time for reflection is often limited to seconds. 2nd. That more collisions occur through mistaking coloured side-lights than almost all other causes combined. The truth of the first assertion is almost self-evident, and will be conceded when one considers the increasing rate of speed, as compared with the more leisurely progress of the days when steam was unknown.

The history of accidents from collisions, and the conflicting evidence with reference to the bearings of coloured lights, as exemplified in our law courts, will, I think, sustain the latter statement. I am careful not to import into your columns anything that is not practical, free from sensationalism, and untinctured with medical phraseology, but the fact that colour-blindness occasionally exists, and is a grave cause of disaster; associated as it may be with blurred vision and short sight, cannot be too widely known. This subject has been recognised in the Cunard Service, and the surgeons of these steamships are now, at my suggestion, supplied with test-types, plain and coloured, for the detection of such cases of incapacity amongst the "look-out men." This examination has already proved its utility, and I think it would repay shipowners, apart from the consideration of loss of life, to be careful that officers placed in charge of the bridge are free from all such optical defects. It will be granted that the officer should, and the truth is he generally does, recognise lights ahead before they are reported; hence I think it would be a wise precaution to insist that he should produce a "Certificate of Competence," to be obtained from a regular oculist, before entrusting him with the responsible charge of the night-watch of a modern steamer. The good effects of this test would not limit itself here, it would be manifest in the alert efficiency of the crew, as no officer alive to the importance of this fact would detail for "look-out" duty any man of whose powers of vision he was doubtful. Many lives and much valuable property have been lost in times past through unseaworthy ships, and it is possible nowadays that avoidable accidents occur through inattention to "the eyes of the ship." Such disastrous possibilities would, I feel sure, be greatly limited by the practical carrying out of the above suggestions. In connexion with this subject, and very closely allied to it, is the quality of the red and green lights now in use. It is notorious that these are very unequal in different vessels; some being readily distinguishable, while others are very indistinct, or so faint as to colours that it is almost impossible to tell, in certain atmospheric conditions, which light is presenting, before the object is so close that contact is almost unavoidable. This should not be, and the subject might well engage the attention of the authorities, to see that no vessel leaves any port in the kingdom without carrying standard lamps stamped by the Board of Trade, and supplied with the most powerful illuminating oil and wick, so that these diagnostic lights might be uniform and pronounced. The size of the lights might also be usefully enlarged, depth of colouring being, however, of more importance than extent of surface. It is a problem for the ingenious, whether in addition to the discriminating colours of starboard and port, some arrangement of one or other of these lights as to size, shape, height from the deck, or numbers, might not be adopted, as an added precaution. Nowadays, when the carrying trade is being absorbed by the swiftly moving steamers, and when collision between two of these monsters means such a frightful catastrophe, anything that tends to this narrow issue is worthy of careful consideration.

I am, Sir, your obedient servant,

R. A. CALDWELL,
Liverpool, Dec. 9th, 1876. Surgeon, &c., R.M.S. *Russia*.

THE INTER-HOSPITAL RUGBY CUP TIES.

WE have received the following account of the first round of the Inter-Hospital Rugby Cup Ties from a special correspondent:—

London v. *King's*.

For this match for the Inter-Hospital Rugby Cup London were the favourites, King's being a scratch side with no fixtures. But the game was something more than a trial gallop. The King's men were well endowed with pluck and pace. There was no surrender. The tackling was relentless. The London pack was heavier, but without Morton, who was resting in view of the International fixture, their work was not convincing. There was more life and dash in the King's scrum, admirably led by Laughlin and Hacker, who scored the loser's only try. And so there was very little in it forward. Outside the scrum it was a different tale. The combination of the colonial contingent baffled a willing side. Lindon, the King's captain, tried in vain to stem the tide. In defence and attack the Kent player was great. His drop goal rallied his side. He was not well supported. Addison at full back and Leigh at half did fairly well. The rest were hardly in the picture. Late in the game individualism was well rewarded. Palmer, Macpherson, and Heale were ever on the move. Batchelor crossed the line five times. London eventually won by 3 goals and 6 tries (33 points) to 1 dropped goal and 1 try (7 points).

London.—Woods (back); Batchelor, Palmer, Macpherson, and Ashe (three-quarter backs); Heale (captain) and Lindsay (half backs); Kennedy, Chapman, Dew, Mortimer, Powell, Hodges, Nicholson, and Whyte (forwards).

King's.—Addison (back); Symons, Lindon (captain), Pasley, and Smith (three-quarter backs); Leigh and Hacker (half backs); Hacker, Laughlin, Thomas, Gibson, Guild, Hodges, Ashe, and Simpson (forwards).

St. Mary's v. *St. Bartholomew's*.

Bart's have an excellent record this season and on points won this tie easily, but for three parts of the game their superiority was not pronounced. They possess men with the scoring faculty and Mary's do not, and so Bart's crossed over leading by 12 points (a dropped goal, a placed goal, and a try) to *nil*. But their heavy weights in the scrum were not at all skilful in gaining possession and the outsides allowed the Mary's forwards to bustle them off their game. The Mary's pack was very good indeed in the first half; their insistent footwork commanded respect. And early in the second half all this was pronounced. Then the half-trained scrum, which had so worried the Bart's backs, cracked, and one saw the poverty of the rest. Time and again Coombs and Richards set their outsides on the move, and the score mounted rapidly. Vickers alone faithfully served his side. His tackling was of great value; indeed, he was the best man on the field. But the end came, leaving Bart's winners by 31 points to *nil*.

Mary's.—Vickers (back); Batchelor, Green, Alexander, and Bullock (three-quarter backs); May and Compton (half backs); Galpin, Finlaison, Walker, O'Connell, Silcock, Watermeyer, Evans, and Argles (forwards).

Bart's.—Dive (back); Bridgeman, Richards, Beyers, and Neal (three-quarter backs); Coombs and Robbins (half backs); Van Schalkwigh, Binney, Linn, Brewitt, Adams, Von Braun, Evans, and Jones (forwards).

University College Hospital v. *Westminster Hospital.*

This tie was quite spoiled by the weather. Driving rain with a greasy ball made accurate play impossible and probably saved Westminster from a much more severe defeat. The two Twinings held the University outsides together. They were ever in the thick of the fray. Their defence and attack were equally efficient. The other backs were well advised to play up to them, and University profited. For the first quarter of an hour Westminster pressed and Kelman scored for them. After that University had matters all their own way and won quite comfortably by 16 points to 5.

University.—Goddard (back); Jardine, Twining, Twining, and Cooke (three-quarter backs); Hempson and Smith (half backs); McGillycuddy (captain), Beauchamp, Alderson, Barton, Redkin, Gainaway, Norman, and Winterbotham (forwards).

Westminster.—Kingston (back); Kelman, Ebden, Scott, and Buller (three-quarter backs); Paisley and Briscoe (half backs); Montgomery, Neath, Alchin, Ranson (captain), Lee, Mitchell, Clay, and Hacker (forwards).

PERSONAL INFECTION IN TUBERCULOSIS.

A LURID story, of the kind which we are perhaps a little accustomed to from America, was published last week in one of the evening papers. An unfortunate woman having been shot by her husband, who immediately afterwards turned the weapon against himself and committed suicide, an inquiry into the crime was held. In the murderer's pocket was found a letter addressed to the public, beginning, "It is a crime to be ill," while the rest of the letter explained that the writer was in the last stages of tuberculosis, and that medical men had warned his wife that if she remained with him she would contract the disease. He had determined therefore to shoot her lest she should desert him. The medical lesson contained in this story is the fact that the fear of personal infection of tuberculosis is becoming greatly exaggerated, and there seems sometimes a risk lest medical men should unnecessarily increase the public disquiet. Of course, there is a chance of personal infection, but when its measure is carefully estimated it can seldom call for such a reversion of all the usual social obligations as is implied by the separation of husband and wife.

INGRATITUDE.

WE do not remember a meaner theft than that for which Edward Dixon, a carman of Somers Town, was sent to prison for a month by Mr. D'Eyncourt at Clerkenwell police court last week. The man had brought his baby to the receiving ward of the Royal Free Hospital, where the resident physician found it was almost moribund. Hastening to attend it, she left two purses containing 16s. on the table, which Dixon immediately stole. The man's only excuse seems to have been that he "didn't think the baby was so bad." The magistrate did not underestimate this action when he called it "a disgusting exhibition of human ingratitude."

THE SHIPWRIGHT PRESSURE FILTER.

THIS device enables a porous cone to be attached to the supply tap, the filtering speed being about one pint of water in ten minutes. The cone is enclosed in a metal cylinder, and the whole apparatus and its parts can be submitted to periodical cleansing. Having regard to the rate at which the water filters through, and assuming that the facility with which the filter can be regularly cleaned is taken advantage of, there can be no reason for doubting its purifying power. We have also inspected a larger form of filter, the novel feature of which was that the porous cone was in two sections made tight by a rubber ring. This arrangement obviously assists to keep the filtering medium clean, and that is a very important matter. The specimens were submitted to us by the Shipwright Filter Company, of 78, Springbank-road, London, S.E.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Feb. 16th, 1910.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Feb. 10	30·25	S.W.	...	68	47	35	35	37	Fine
,, 11	30·06	S.W.	0·06	79	50	37	41	41	Overcast
,, 12	30·02	W.	0·05	63	46	34	35	35	Fine
,, 13	30·14	S.W.	...	71	51	35	42	43	Cloudy
,, 14	29·73	S.W.	0·06	56	46	39	39	39	Overcast
,, 15	29·01	W.	0·35	78	49	39	42	43	Cloudy
,, 16	29·50	S.W.	0·01	76	45	35	36	37	Fine

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

TUESDAY.

MEDICAL SECTION (Hon. Secretaries—A. M. Gossage, A. F. Voelcker): at 5.30 P.M.

Discussion:

On Pericarditis with Effusion as Determined by Operation or Post-mortem Examination (opened by Dr. Samuel West).

THURSDAY.

NEUROLOGICAL SECTION (Hon. Secretaries—E. Farquhar Buzzard, Wilfred Harris): at 8.30 P.M.

Papers and Specimens:

Dr. Hinds Howell: Tumours of the Pineal Body.

Dr. Campbell Thomson: Thrombosis (? Pontine), causing Left Fifth Nerve Anæsthesia and Hemianalgesia of the same Side.

Dr. Wilfred Harris: A Case of Thrombosis of the Posterior Inferior Cerebellar Artery, Followed by Severe Trigeminal Neuralgia in the Analgesic Facial Area.

FRIDAY.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—E. I. Spriggs, J. P. Lockhart Mummery, J. T. Leon): at 4.30 P.M.

Cases:

Dr. T. R. Whipham: A Case of Myelogeneous Leukæmia in an Infant of 18 Months.

Mr. P. Lockhart Mummery: A Case of Congenital Separation of the Recti Abdominis and Double Inguinal Hernia in a Girl.

Dr. David Forsyth: A Case of Non-cretinous Idiocy with Goitre.

Dr. G. Pernet: Lupus Vulgaris.

And other Cases.

Specimens:

Dr. W. Essex Wynter: Specimens and Colour Photographs from a Case of Chloroma shown at a Former Meeting.

Dr. Walter Carr: Granular Kidneys from a Boy of 12.

EPIDEMIOLOGICAL SECTION (Hon. Secretaries—W. H. Hamer, G. S. Buchanan): at 8.30 P.M.

Paper:

Dr. J. E. Sandilands: The Communication of Diarrhœa from the Sick to the Healthy.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—9 P.M., Dr. J. S. R. Russell: The Cerebellum and its Affections (Lettsomian Lecture).

MEDICO-LEGAL SOCIETY, 11, Chandos street, Cavendish-square, W.C.

TUESDAY.—8.15 P.M., Mr. J. H. Evans: The Value of the Ear in Identification.—Dr. J. Scott: The Death Penalty.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY.—5 P.M., Prof. A. Keith: The Anatomy of the Negro and Negroid Races.

WEDNESDAY AND FRIDAY.—5 P.M., Prof. W. S. Handley: The Surgery of the Lymphatic System.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eyes. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Pritchard: Clinical Pathology.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eyes. 2.30 P.M., Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Mr. R. Lloyd: Anæsthetics.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eyes. 5 P.M., Lecture:—Dr. G. Stewart: Vascular Diseases of the Brain and their Treatment.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Medical Registrar: Demonstration of Cases in the Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Cole: General Treatment of Mental Diseases.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eyes. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye. 2.15 P.M., Special Lecture:—Dr. F. Taylor: Muscular Atrophy.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Dr. R. Bradford: Cerebral Hæmorrhage.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture: Dr. E. F. Buzzard.
FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. E. F. Buzzard.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.
TUESDAY.—5 P.M., Clinical Demonstration:—Dr. J. Mackenzie.
WEDNESDAY.—3 P.M., Clinical Demonstration:—Dr. F. Palmer.
FRIDAY.—2 P.M., Clinical Demonstration:—Dr. P. Stewart. 5.30 P.M., Clinical Demonstration: Dr. E. Macnamara.

ST. MARK'S HOSPITAL FOR CANCER AND OTHER DISEASES OF THE RECTUM, City-road, E.C.

MONDAY.—5.30 P.M., Lecture:—Mr. G. Watson: Innocent Growths.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Coccus Diseases: I., Impetigo Contagiosa; II., Furuncle; III., Carbuncle; Coccogenic Sycosis.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (21st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (22nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College 2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (23rd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (24th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, (9 A.M., Major, 2 P.M.).

FRIDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor 9 A.M., Major, 2 P.M.).

SATURDAY (26th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

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Trade and Miscellaneous Advertisements and Situations Vacant ...	Every additional Line 0 0 6

Situations wanted: First 30 words, 2*s.* 6*d.*; per additional 8 words, 6*d.*
Quarter Page, £1 10*s.* Half a Page, £2 15*s.* An Entire Page, £5 5*s.*
Special terms for Position Pages.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Advertisements (to insure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 35, Rue Franklin, Asnières, Paris.